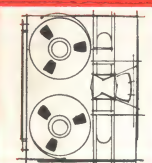


CONDENSED
CATALOG M-2

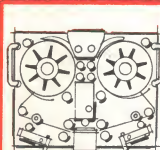


POTTER®

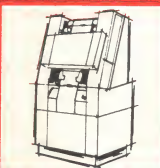
EDP Equipment



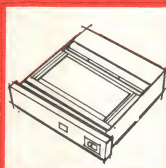
Magnetic Tape Transports



Perforated Tape Readers



High Speed Printers



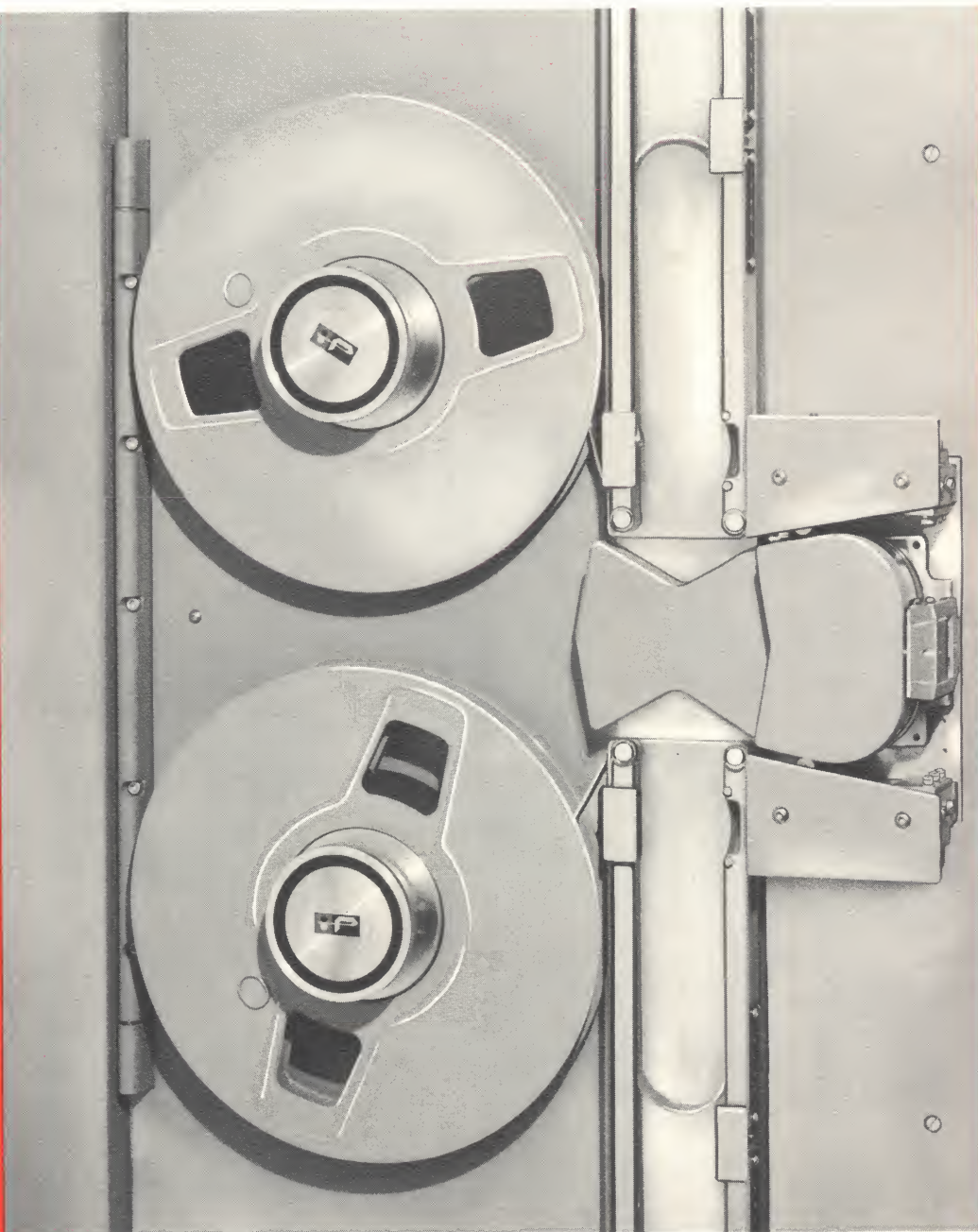
Accessory Equipment

POTTER INSTRUMENT COMPANY, INC.

NEW low-cost digital

**V
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UNIQUE VACUUM COLUMN BUFFER DESIGN results in a simplified unit with fewer moving parts. Photoelectric tape loop sensing eliminates mechanical vacuum switches. New Potter Quick-Lock hubs and easy tape threading cut reel change time by more than 80%.

* Patent Applied For. QUICK-LOCK is a Potter Instrument Company trademark.

magnetic tape transports...

three models allow a choice of speed capabilities

New Potter vacuum-column magnetic tape transports and tape systems are economical units designed for applications requiring moderate data transfer rates. Speeds range from 1 ips to 75 ips with packing densities *up to 800 bpi*.

A choice of three models with different performance ranges permits selection of the most economical machine for every individual application. All three models are alike in design, operation and maintenance. Most component parts are interchangeable. This means all three may be specified

for the same computer without losing the benefits of standardization.

Vacuum-column tape buffer storage is used on all models in combination with a Potter precision tape drive system. Vacuum cleaning and vacuum tape drag before the read/write head assure high operating reliability.

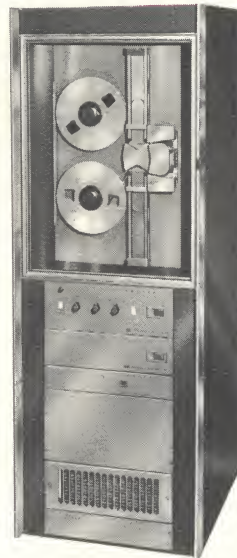
These new Potter transports units are particularly well suited for use with small- and medium-scale computers, as well as a variety of special applications.



MT-24 Tape Transports and Magnetic Tape Systems

- 1-36 ips (standard speeds 3, 7.5, 15 and 24 ips)
- 200 commands per second at 24 ips
- packing densities of 200, 556 and 800 bpi
- data transfer to 28.8 kc
- compatible with IBM 729 and 7330 at all packing densities
- two and one-half minute rewind
- tape threading in 15 seconds

See Product Data 1-201



MT-36 Magnetic Tape Transport and Magnetic Tape Systems

- 1-50 ips (standard speeds 30, 36 and 45 ips)
- 200 commands per second at 36 ips
- packing densities of 200, 556 and 800 bpi
- data transfer to 40 kc
- compatible with IBM 729 and 7330 at all packing densities
- two and one-half minute rewind
- tape threading in 15 seconds

See Product Data 1-204

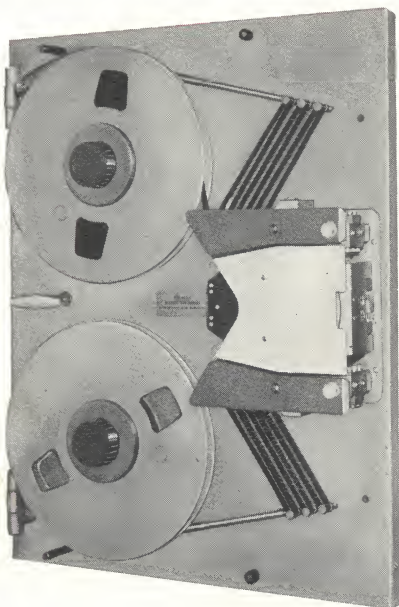


MT-75 Magnetic Tape Transport and Magnetic Tape Systems

- 1-75 ips (standard speeds 60 and 75 ips)
- 200 commands per second at 75 ips
- packing densities of 200, 556 and 800 bpi
- data transfer to 60 kc
- compatible with IBM 729 and 7330 at all packing densities
- two and one-half minute rewind
- tape threading in 15 seconds

See Product Data 1-205

POTTER high-performance digital magnetic tape transports



M906II-2 Magnetic Tape Transport and Magnetic Tape Systems

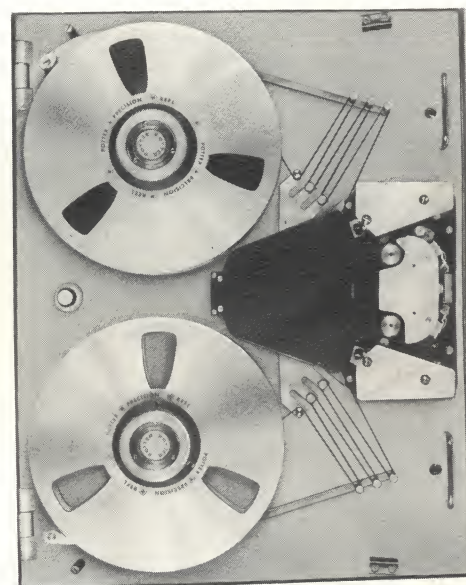
The most versatile transport on the market today, the M906II-2 has a proven record in over 1000 installations. Tape speeds of 1-150 ips are offered in a variety of combinations with standard tape widths from $\frac{1}{2}$ "- $1\frac{1}{4}$ ".

Supplied as a transport alone, or as an integrated tape system with read/write amplifiers, manual controls, cabinets, and other standard Potter accessories, the M906II-2 meets almost every computer format requirement as well as special laboratory needs.

SPECIFICATIONS

- 1-150 ips
- up to six speed combinations
- 200 commands per second at 100 ips
- data transfer up to 96 kc with standard IBM recording format — up to 240 kc with Potter High Density Recording
- packing densities of 200, 556 and 800 bpi in IBM format (1100 bpi in Potter high density format).

See Product Data 1-206



MT-120 Magnetic Tape Transport and Magnetic Tape Systems

A high-speed, reliable tape handling machine — at a moderate cost. An improved vacuum-buffering system makes possible bidirectional tape speeds up to 120 ips without program restrictions. Convenient operator features include push-button loop control arm retraction, fast tape threading. The MT-120 is available as a transport separately or with associated read/write amplifiers, cabinets and other accessories.

SPECIFICATIONS

- 1-120 ips
(standard speeds 75, 100, 112½, 120 ips)
- 200 commands per second at 120 ips
- data transfer up to 96 kc with standard IBM recording format
- packing densities of 200, 556 and 800 bpi
- also available for use with other computer formats

See Product Data 1-203

POTTER HIGH DENSITY RECORDING

Potter contiguous, double-transition, high-density recording is a revolutionary multi-channel technique that permits recording up to 500,000 alpha-numeric characters per second at densities up to 1100 bpi. Bit dropouts are guaranteed fewer than 1 in 10^7 at

1100 bpi, and reread time to recover transient errors is less than .005%.

Since interchannel time displacement is rendered insignificant under this system, significant increases in longitudinal recording density are practical.

POTTER

transport accessories



Magnetic Heads

A variety of digital magnetic record/playback heads compatible with virtually all formats have been developed by Potter engineers. Special materials for all-metal construction and ultra-precise manufacturing methods assure long head life and highest data recovery reliability. Heads are available in single-gap, interlaced, and dual-gap models, from single track to as many as 56 tracks.



Cabinets

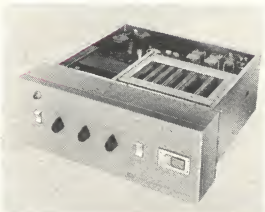
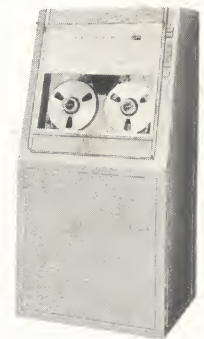
Two standard rack cabinets are available to accommodate tape transports and accessories. Sturdy construction — 19-inch mounting rails give solid support for the transport, manual control, drive electronics and power supply and read/write amplifiers. Casters permit easy maneuverability. Colors: Potter gray — or to specification.

◀ M3340

Upright cabinet for all Potter transports. Hinged glass door. Includes built-in blower and filter.

CT-120 ▶

Slope front design for operator convenience. Accommodates models MT-24, M906II-2 and MT-120. Sliding Plexiglass door.



Manual Control

The following Manual Control units are available for use with Potter Tape Transports:

M3321 for Transport Model 906II-2
PBH/V-120 for Transport Model MT-120 and MT-24

Drive Electronics

EC-75 . . . for Transport Model MT-75
 (mounted on drive electronics chassis)

EC-36 . . . for Transport Model MT-24
 and MT-36
 (mounted on drive electronics chassis)

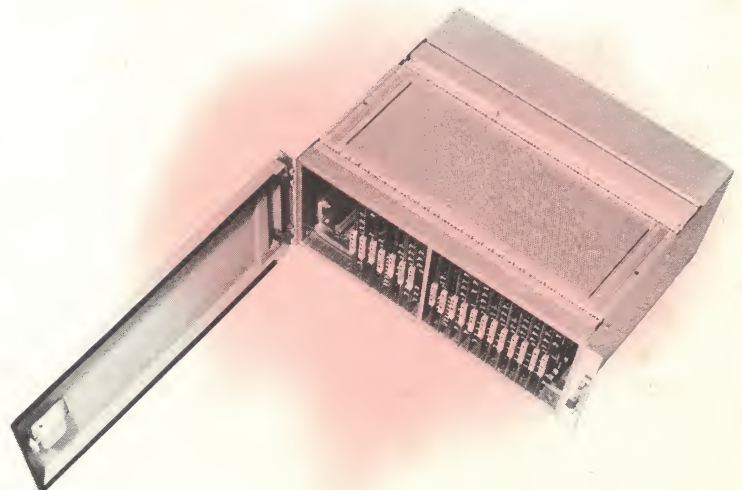
Read/Write Amplifiers

Potter read/write amplifier systems are solid-state electronic packages housing read/write amplifiers, various control and logic modules, and a regulated power supply. In conjunction with the tape transport, the amplifier records digital information on magnetic tape — reproduces the data on command.

MODEL MA-315 . . . designed to cover the range of IBM-compatible tape formats: Model MA-31 (uncompensated) for 200 bpi; and Model MA-315 (compensated) for 200/556/800 bpi. Read/write tape speed: 0 to 120 ips. (PD 1-402)

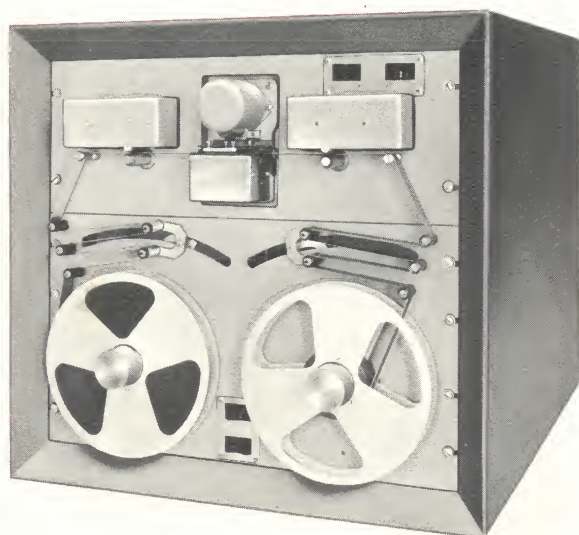
MODEL MSA375 . . . read/write switching amplifier . . . designed to reduce the cost of digital magnetic tape systems by permitting time sharing among groups of up to 4 tape units. Compatible with all IBM tape formats at 200/556/800 bpi. (PD 1-403)

MODEL 921A . read/write amplifier . . . compatible with a variety of computer formats including IBM, Uniservo, Burroughs, Philco, Minneapolis-Honeywell and RCA. Tape speeds from 1 ips to 150 ips. (PD 1-401)



POTTER high speed tape readers

to military specifications



PTR-500 perforated tape reader

The Potter PTR-500 is a high-speed, bidirectional photoelectric tape reader which provides high reliability and high performance at a moderate price.

Standard two-speed unit reads tape dependably at 25 inches (250 characters) or 50 inches (500 characters) per second. First characters can be read in 8 ms when operating at 50 ips. Patented MONOBRAKE* feature enables stopping on sprocket hole of stop character — eliminates tape bounce and buckling.

Where tape supply and take-up is required, a PTS-500 perforated tape spooler companion unit is furnished. It operates compatibly with the PTR-500 reader at all speeds up to 50 ips.

SPECIFICATIONS

- 25 and 50 ips
- 5, 7 and 8 levels standard
- 11/16", 7/8" and 1" tape widths standard
- Stop on STOP Character
- Start Time: 8 milliseconds maximum
- up to 100 steps/second

See Product Data 2-110

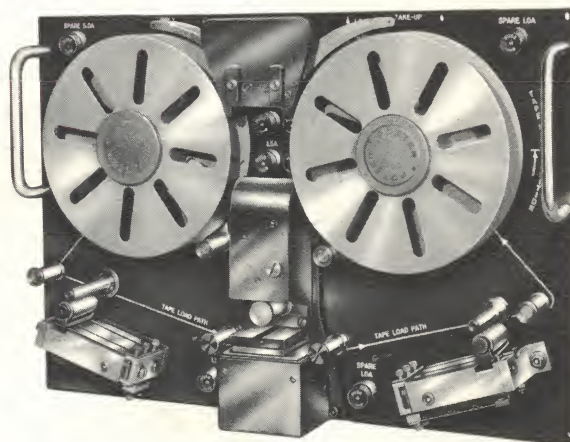
PSR-200 perforated tape reader

Proven successful in a variety of military applications, the PSR-200 is a bidirectional, 200 character-per-second, photoelectric tape reader. Self-contained regulated power supply, amplifiers and start-stop circuits are completely transistorized. Rugged construction permits operation in any position. Qualified to meet stringent environmental requirements of Mil-T-21200.

SPECIFICATIONS

- 20 inches per second tape speed
- 6-inch diameter tape reels
- Start Time: 15 milliseconds at 20 ips
- Stop on STOP character
- Rewind Time: Less than 3 minutes per 500 feet
- 1-inch tape width standard, 11/16 & 7/8-inch optional
- 8 channels standard; 5, 6, 7 optional

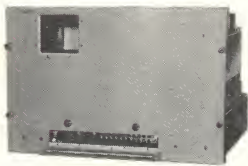
See Product Data 2-211



* trademark of Potter Instrument Company, Inc.

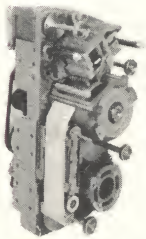
and militarized printers

Potter Instrument Company has specialized in the design and development of high-speed, electronic printing systems for over a decade. Potter high-speed systems have proved their efficiency in such applications as communication lines, data checkout, programmers, data listers and computer checkout. Units are available to meet military specifications.



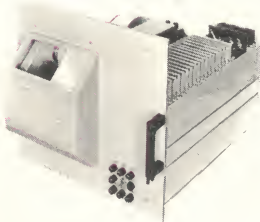
HSP-3601 Parallel Input High-Speed Printer

An in-line parallel input military printer capable of printing up to 26 columns of 16 characters each at 720 lines per minute. Pressure sensitive paper.



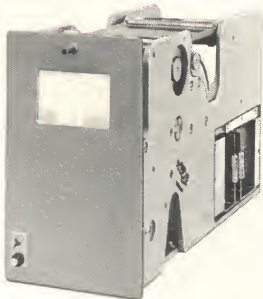
HSP-3602 High Speed Printer

Designed for maximum printing speed of 420 lines per minute, up to 20 columns and 16 characters. Fanfold or roll-type paper. Separate electronic packages available for parallel or serial inputs. Developed for Polaris program.



HSP-3603 Serial Input High-Speed Printer

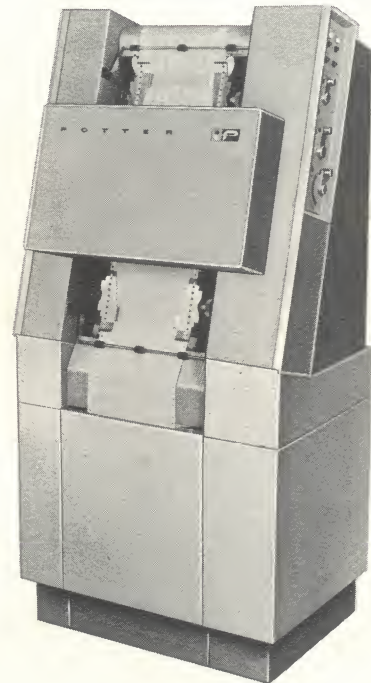
Designed for printing speeds of 600 lines per minute in a 12-column format — 16 characters available. Contains buffer storage capable of accepting information asynchronously up to 90 kc, serial by character, and parallel by bit. Pressure sensitive paper utilized.



HSP-3604 High-Speed Serial or Parallel Printer

Designed for character at a time or parallel printing in a 26 column with 64 characters available. Drum speed of 15 RPS yields a serial average print-out of 100 characters per second or 600 lines per minute in the parallel mode.

High-Speed Computer Output Printers and Printing Systems



HSP-3501

Was developed to meet a long-standing need in the data processing industry for a reliable high-performance printer at moderate cost. It uses impact printing techniques that have been successfully employed on a large scale by Potter Instrument Company in its Polaris Printer Program. The HSP-3501 is available as a basic line printer or as a complete printing system. A wide selection of print characters and line widths available.

SPECIFICATIONS

- alphanumeric printing with a full complement of 64 characters, numeric copy at 2400 lpm
- up to 64 characters in up to 160 columns
- asynchronous input up to 100 kc, optional synchronous input at 2 MC or less
- paper stock up to 17-25/32 in width.

About POTTER



POTTER PLANTS

Tape transport production is carried on in this modern 62,000 sq. ft. plant on Sunnyside Boulevard, Plainview, New York. Building also houses corporate offices, sales, engineering and research groups.

East Bethpage Road plant (below), completed in 1963, produces high-speed printers. A third plant in Luquillo, Puerto Rico, manufactures magnetic and photoelectric recording and playback heads. Total manufacturing space in all Potter plants exceeds 110,000 sq. ft.

Present Potter employment is in excess of 650 people.



POTTER SERVICE

Potter Repair Centers have been established in strategic locations within the continental United States and abroad, to support the entire Potter product line.

Staffed by trained representatives, these centers are equipped to effect on-site installations of equipment, and to perform repair, maintenance and overhaul functions.

In addition, Potter spare parts are available on a 24-hour delivery basis to meet any customer's emergency requirements — within 72 hours for standard parts under normal conditions. Potter also offers provisioning and logistics capabilities to meet all existing military specifications.

SALES OFFICES

Potter Instrument Company, Inc.
151 Sunnyside Boulevard
Plainview, Long Island, New York
(516) OVerbrook 1-3200
TWX: 516-433-9320
Cable Address: PICO

Potter Instrument Company, Inc.
Los Angeles (La Canada), Calif.
1041 Foothill Boulevard
(213) MUrray 1-5845

Potter Instrument Company, Inc.
Phoenix, Arizona
(602) ENterprise 150

INTERNATIONAL SALES

Potter Instrument Company, Inc.
Spur Road, North Feltham
Trading Estate
Feltham, Middlesex, England
Telephone FELtham 4266

INFORMATION SUBJECT TO CHANGE WITHOUT NOTICE



POTTER INSTRUMENT COMPANY, INC.

151 SUNNYSIDE BOULEVARD, PLAINVIEW, LONG ISLAND, N. Y. (516) OV 1-3200

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___ **Magnetic Tape Transports & Systems**

- ___ Incremental Tape Transports
___ MT-24 Transport — 1-36 ips
___ MT-36 Transport — 1-50 ips
___ MT-75 Transport — 1-75 ips
___ MT-120 Transport — 1-120 ips
___ M906II-2 Transport — 1-150 ips
___ Quick-Lock Hubs

___ **Read/Write Amplifiers**

- ___ Switching Amplifiers

___ **Record/Playback Magnetic Heads**

___ **High Density Recording System**

___ **Off-Line Print Systems**

- ___ Graphic Print System

___ **High-Speed Line Printers**

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Special product interest or application _____

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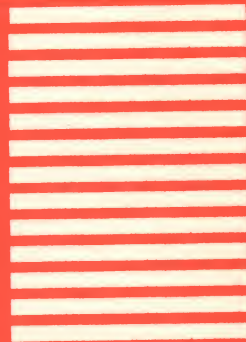
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151 Sunnyside Boulevard

Plainview, New York 11803

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POTTER



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TWX: 516-433-9320

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Shoppenhangers Road
Maidenhead, Berkshire, England
Telephone Maidenhead 20361

CANADA

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Telephone 401-8785, 402-4337

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Zurich 8, Switzerland
Telephone 05, 47 99 66

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B. N. BOSE & COMPANY
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Calcutta 1, India
Telephone 23-4213

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Shoppenhangers Road
Maidenhead, Berkshire, England
Telephone Maidenhead 20361

INTERNATIONAL DATA PRODUCTS, INC.
Post Office Box 196, Road 3
Luquillo, Puerto Rico
Telephone Luquillo 729-2880

TRANSDUCER CORPORATION
Post Office Box 196, Road 3
Luquillo, Puerto Rico
Telephone Luquillo 729-2880



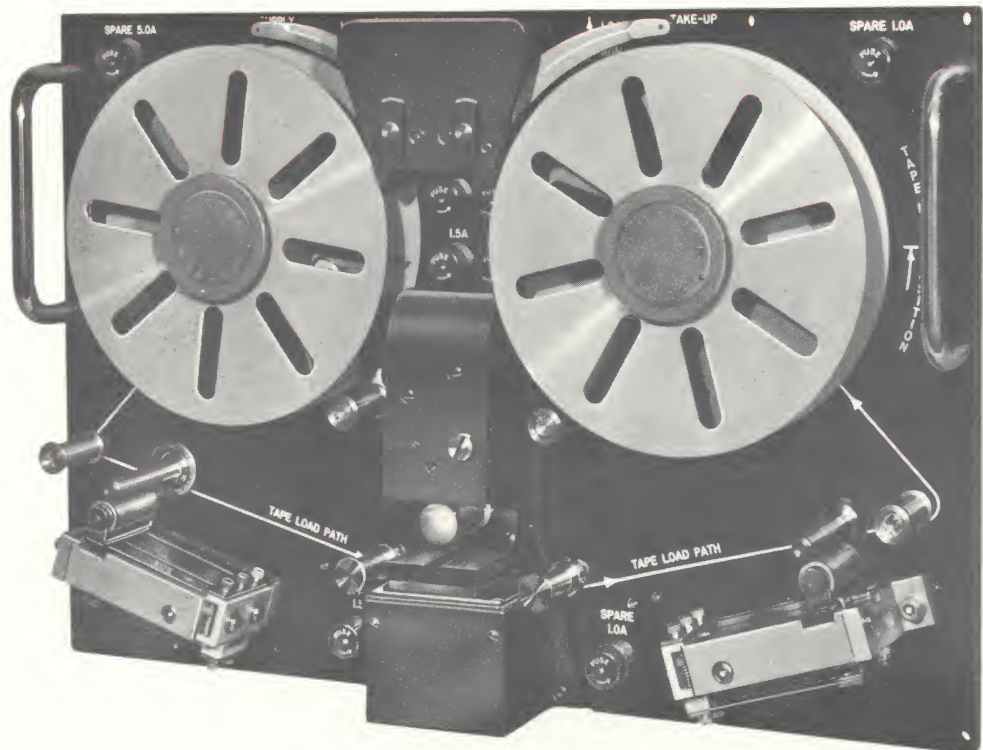
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Philadelphia (Southampton), Pennsylvania—P.O. Box 95—(215) ELMwood 7-6645
Rome, New York—P.O. Box 367—Lyons Falls 6211

PSR-200 PERFORATED TAPE READER AND SPOOLER



FEATURES

- Photoelectric Reading with Silicon Solar Cells
- Bidirectional Tape Speeds to 200 Characters/Second Rewind to 450 Characters/Second
- Rewind Time Less Than 3 minutes for 500 feet
- Rugged Construction, Completely Transistorized Silicon Semiconductors
- Individual Sensitivity Adjustments
- Military Approved to Meet MIL-T-21200C



DESCRIPTION

The Potter Model PSR-200 Perforated Tape Reader and Spooler is a bidirectional, 200 character per second photoelectric tape reader and spooler. The unit is operable as both a reader and spooler for easy adaptation to a variety of OEM applications, including computer programming, process and industrial numerical control.

Self-contained, regulated power supply, amplifier and Start/Stop circuits are completely transistorized. All semiconductors are silicon. Individual and sprocket amplifiers contain individual sensitivity adjustments. Read amplifiers, control circuits, and the read-head lamp are supplied from feedback-type

regulated power supplies. All connections are made through a Cannon DDM-50P connector. The PSR-200 can be operated in any position, and almost all operations are externally controlled. The unit is designed for standard 19" relay racks.

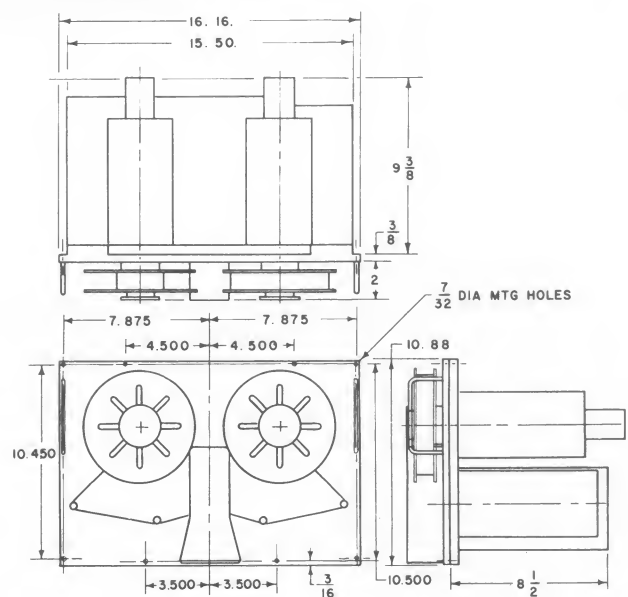
PERFORMANCE SPECIFICATIONS

The PSR-200 Perforated Tape Reader and Spooler is designed to meet applicable environmental requirements of MIL-T-21200C for Class 2 equipment. Ability to operate in and pass the following environments is dependent upon customer-supplied mounting and enclosure: sand and dust, explosion, rain, salt, fog, R.F.I.

SPECIFICATIONS

TAPE SPEED	200 char/sec., bidirectional (standard)
Rewind Speed	450 char/sec., nominal
Rewind Time	Less than 3 minutes for 500 feet
TAPE STORAGE CAPACITY	500 feet of 2.5 mil aluminum mylar tape, or 300 feet of 4.7 mil paper mylar tape on 6-inch diameter reels
TAPE WIDTH	1 inch
TAPE TRANSPARENCY	40% maximum transmittance. For maximum reliability in military environments, opaque aluminum mylar tape should be used
NUMBER OF CHANNELS	8, standard; 5, 6 and 7, optional
START TIME (To reach next character)	30 milliseconds, maximum, over complete temperature range
STOP DISTANCE	Stops on character in normal speed. Stops within 2 characters of stop character in rewind speed
COMMAND LINES	Three command lines are provided. Each line requires a level type signal from an NPN inverter stage. Inverter to have a supply voltage of +13 volts or greater and be capable of sinking 10 ma or greater from command line when transistor is in saturation (Vsat., maximum = +1 volt or less at 10 ma)
FWD/REV LINE	FWD: 0V; REV: +V
STOP/START LINE	STOP: +V; START: 0V
LOW SPEED/HIGH SPEED LINE	LOW SPEED: +V; HIGH SPEED: 0V
INFORMATION OUTPUTS	Sprocket and information channel outputs are level type from NPN inverters. In the no hole condition, transistor is on and capable of sinking 25 ms, maximum, from customer load. In the no hole condition, transistor is off and output line rises to +15 volts through 1 meg-ohm
MACHINE CONDITION	Low Tape left } two form Low Tape right } C contacts Tape break left } two form Tape break right } C contacts Tape load left } two form Tape load right } A contacts
POWER REQUIREMENTS	27 volts DC, 3 amps; 115V, 400 cycles, single phase at 80 watts. (60 cycle available on special order)
DIMENSIONS	16.16" W x 10.88" H x 11.75 D
NET WEIGHT	55 lbs. (without cabinet)

PIN NUMBER	DESIGNATION
1	Channel 1 output
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	Sprocket
10	Shield
11	Circuit ground
12	Chassis ground
13	Channel 1 test point
14	2
15	3
16	4
17	5
18	6
19	7
20	8
21	Sprocket
22	Stop/Start
23	Forward/Reverse
24	High-Speed/Low-Speed
25	Common
26	NO
27	NC
28	NO
29	NC
48	Common
30	Common
31	NO
32	NC
33	NO
34	NC
49	Common
35	Common
36	NO Left
37	NO Right
38	
39	
40	+
41	-
42 thru 47 and 50	Spares



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POTTER INSTRUMENT COMPANY, INC.

151 SUNNYSIDE BOULEVARD, PLAINVIEW, LONG ISLAND, N. Y. (516) OV 1-3200

MT-24 MAGNETIC TAPE TRANSPORT AND MAGNETIC TAPE SYSTEMS



INTRODUCTION

The Potter MT-24 Magnetic Tape Transport is a low-cost unit designed for applications requiring moderate data transfer rates. It is particularly well-suited for use with small and medium scale computers, in mass storage and sequential access applications for which high-priced, high-performance transports cannot be justified. The MT-24 provides many features normally found only in more expensive transports. New over-and-under or side by side vacuum column tape storage is used in combination with Potter's precision tape drive system. Vacuum cleaning and vacuum tape drag before the Read/Write head assure high operating reliability.

MT-24 Magnetic Tape Systems, which consist of an MT-24 Tape Transport, manual control unit, and suitable read/write electronics, are completely compatible with IBM systems such as the 729 and 7330. Packing densities of 200, 556 and 800 bpi can be accommodated. Other conventional tape formats utilizing $\frac{1}{2}$ - or 1-inch tape are also available.

Read/Write speeds of 3, 7.5, 15 and 24 ips are standard with the MT-24, with fast two and one-half minute rewind. Start/Stop profiles are smooth and without program restriction free over a command frequency rate up to 200 per second. Other design innovations provide simplified tape loading, convenient transport adjustments, and easier maintenance.

FEATURES

- highest performance and reliability for lowest price
- up to 28.8 kc data transfer (800 bpi)
- Compatible with IBM 729 and 7330 at all packing densities
- low interchannel time displacement
- fast, smooth Start/Stop performance
- new vacuum cleaning incorporated in trough guides
- new over-and-under vacuum storage system
- vacuum muffled for silent operation
- fast two and one-half minute rewind
- tape loading
- rapid, consistent tape stops with new vacuum tape drag

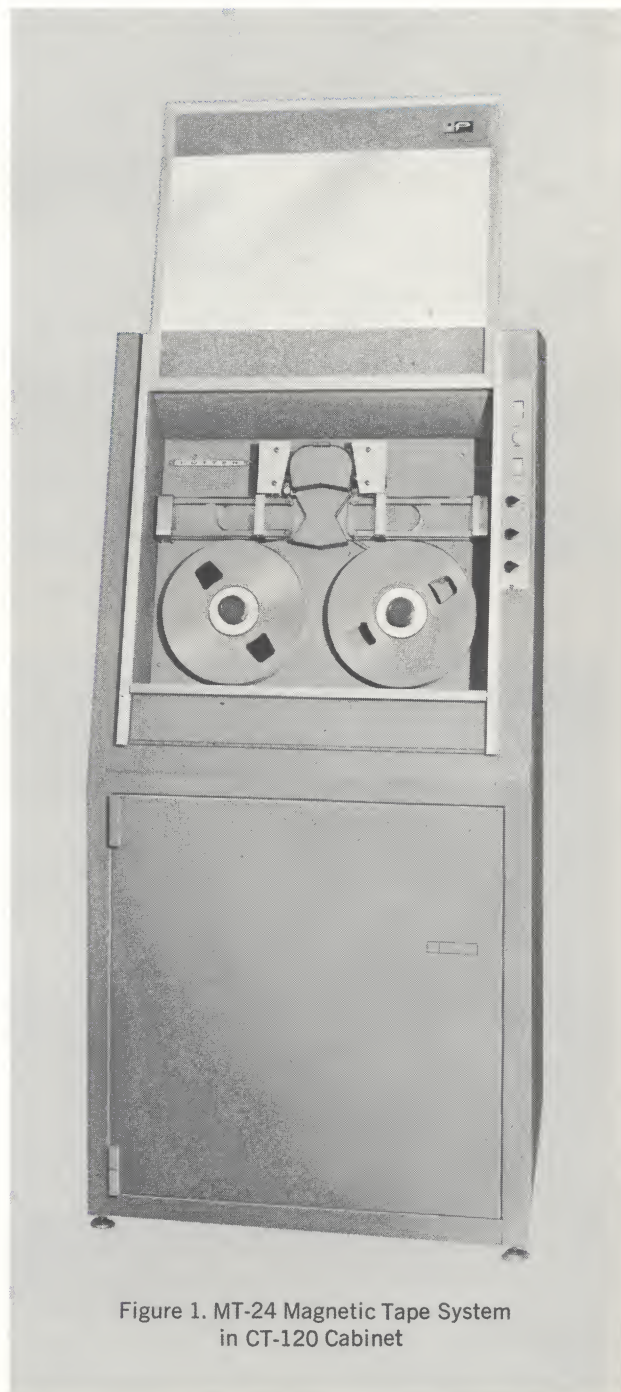


Figure 1. MT-24 Magnetic Tape System
in CT-120 Cabinet

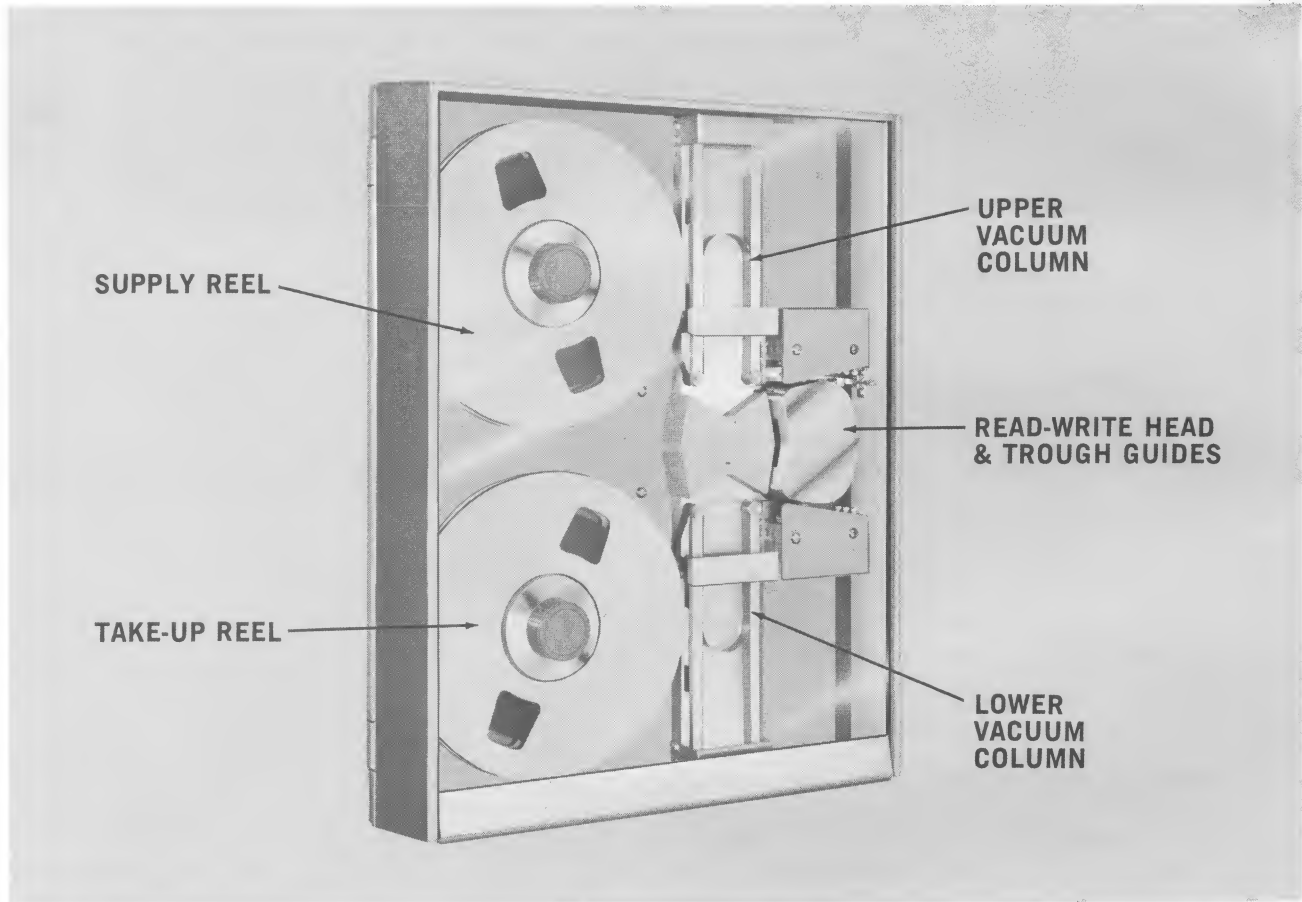


Figure 2. MT-24 Tape Drive

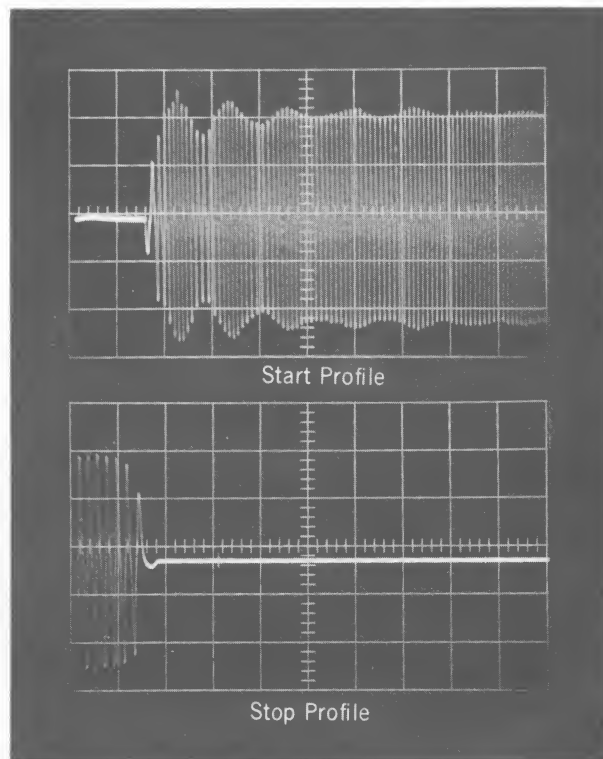


Figure 3. MT-24 Typical Velocity Profiles (1 div. = 1 ms)

VACUUM COLUMN STORAGE

An extremely simple dual vacuum column tape storage system is incorporated in the MT-24 design—a feature normally associated with the most costly tape transport systems. Ample tape storage in the vacuum reservoirs provides restriction-free reading and writing up to 24 ips. Photoelectric loop sensing reliably controls the amount of tape in both vacuum columns. Transparent vacuum column covers are readily detachable for easy access to the column area during routine cleaning. The vacuum blower is soundproofed for exceptionally quiet operation.

TAPE DRIVE SYSTEM

The MT-24 utilizes the Potter fast-response drive system which has become a standard of dependability in the EDP field. Tape motion is controlled by two drive capstans with associated solenoid-actuated drive rollers. New vacuum hold-down of tape in the trough guide area provides improved tape control. The slotted, vacuum trough guides which are precision-shaped for optimum tape guidance, hold dynamic skew to ± 4 microseconds, maximum, at 24 ips. Start time is 5 milliseconds to within 10% of rated speed; stop time is less than 1.5 milliseconds, with smooth velocity profile. (See Figure 3)

MT-24 SPECIFICATIONS

TAPE SPEEDS (single)	3, 7.5, 15 and 24 ips standard; other speeds available: 1 to 36 ips
(dual)	Combinations in a ratio of 2:1, 3:1, 4:1 and 6:1 available
TAPE SPEED VARIATIONS	± 2%
TAPE REWIND	approximately 2½ minutes for full 2400 foot reel
TYPICAL PERFORMANCE	at 24 ips, with ½-inch 1.5 mil Mylar tape:
START TIME	5 ms from receipt of command to within ±10% of tape speed
START DISTANCE	over cycling range of 0-200 commands/second tape travels 0.075" ± .020" within 5 ms after receipt of command
STOP TIME	less than 1.5 mil sec.
STOP DISTANCE	0.025" ± 0.015"
COMMAND REPETITION RATE	Start/stop or forward/reverse 0-200 commands per second, 5 milliseconds between commands for performance within specifications.
WOW & FLUTTER	less than 2% rms at 24 ips
INTERCHANNEL TIME DISPLACEMENT	Static: 12 microseconds maximum
(at 24 ips, any two channels, ½" tape)	Dynamic: ±4 microseconds
	Total: 16 microseconds maximum
TAPE WIDTHS	½" or 1"
TAPE TYPE	1 or 1½ mil Mylar
TAPE REELS	IBM-type 10½" reels and hubs standard for ½" tapes. Potter NARTB-type reels and special "Quicklock" hubs standard for 1" tapes; other reel/hub combinations available
TAPE LOADING	15 seconds-average tape loading time
REMOTE CONTROL INPUTS	Run/Stop; Forward/Reverse; Normal Speed/Rewind Speed, Speed control: High/Low. All Ov/-5v at 6 ma, d.c. levels.
CONDITION INDICATION	EOT/BOT Sensing Ready Forward Reply Reverse Reply Automatic-Manual Write Lock-out (type C contact) Power Supply
ELECTRONICS	all control circuits completely transistorized; modular plug-in construction used throughout

PHYSICAL DATA:

	Dimensions			
	High (in.)	Wide (in.)	Deep (in.)	Weight (lbs.)
MT-24 Tape Transport	24½	19	11	85
EC-36 Drive Electronics & Control	7	19	19	55
CT-120 Slope-Front Cabinet	63	30¾	28½	285
M3340 Rack Cabinet	76	27	35	415
POWER	115 volts ±10%, 60 cycles, 600 watts, 875 watts, peak; 230 volts, 50 cycles, optional			
AMBIENT TEMPERATURE (Operating)	32°F to 125°F			

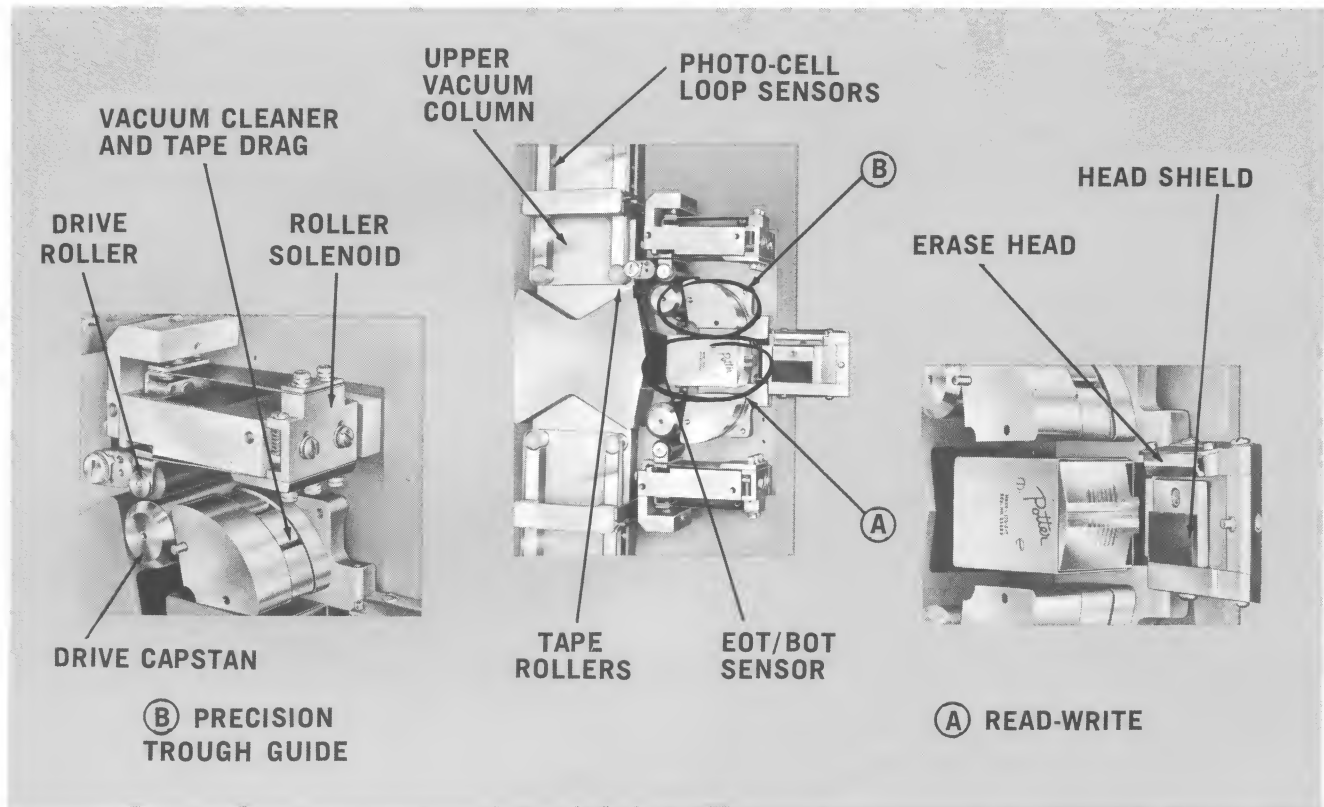


Figure 4. MT-24 Tape Drive Assembly

DRIVE ELECTRONICS & CONTROL

All MT-24 transport functions are controlled by a combined drive electronics and manual control assembly supplied with the transport. This compact package contains all control electronics, together with necessary power supplies and blower for automatic or manual operation. Electronics are solid-state, and feature printed circuit, plug-in modules. Controls include a power ON/OFF switch and a LOAD POINT/UNLOAD switch, and three operating mode selector switches: LOAD-MAN-

UAL-AUTOMATIC, REVERSE-STOP-FORWARD, and FAST REVERSE-STOP FAST FORWARD. For remote operation, the LOAD-MANUAL-AUTOMATIC switch is placed in the AUTOMATIC position; other controls in the STOP position.

Control switches are placed vertically on the front of the CT-120 "slope front" cabinet to the right of the transport. When the M3340 rack cabinet is specified or when no cabinet is supplied, the controls are mounted on the front cover of the drive electronics package (figure 5).

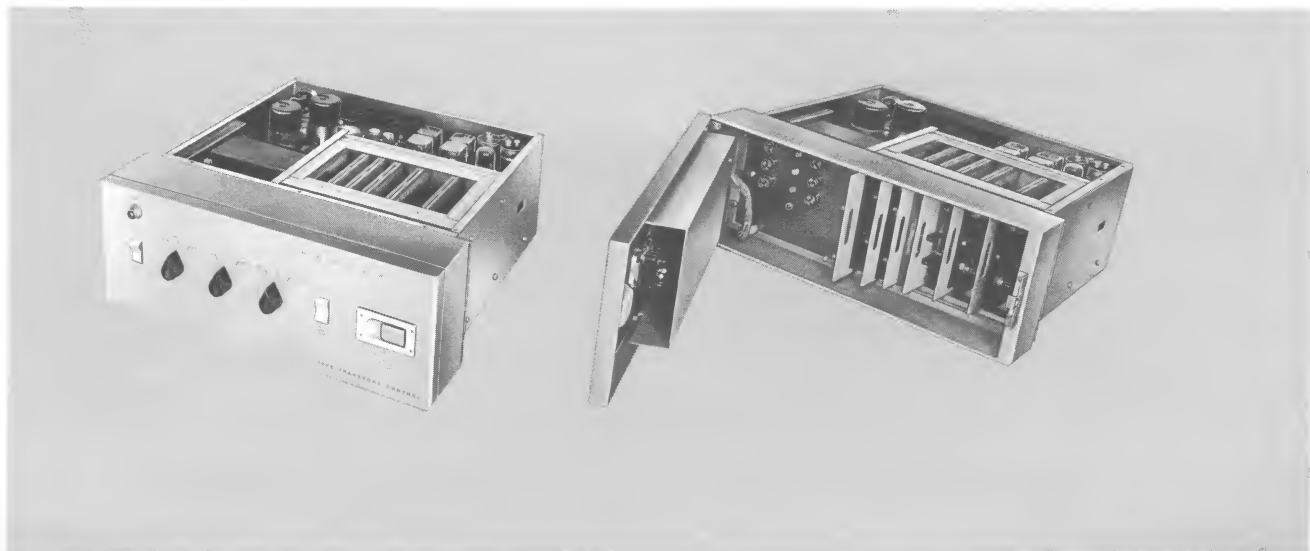


Figure 5. EC-36 Drive Electronics & Control

ACCESSORIES

MT-24 TRANSPORT ACCESSORIES

- **READ/WRITE HEADS.** A complete selection of magnetic heads is available, including heads for IBM seven-channel format. Heads are all-metal, precision fabricated for maximum tape life and minimum interchannel time displacement.
- **REELS & HUBS.** IBM-type reels and hubs are standard equipment on MT-24 transports for $\frac{1}{2}$ " tape. Reel/hub combinations of other manufacturers can also be accommodated. Potter NAB reels and QUICK-LOCK® hubs are standard for one-inch tape.
- **EOT/BOT SENSING.** Photoreflexive (IBM-type) end-of-tape and beginning-of-tape sensing is available for reliable MT-24 tape control.
- **WRITE CONTROL.** A Write Lockup (Write Enable) switch is available for use with file protect rings on IBM or NARTB reels.

MT-24 SYSTEM ACCESSORIES

- **READ/WRITE ELECTRONICS.** Model 921A and MA315 amplifiers are available to accommodate packing densities up to 800 bpi and data transfer rates up to 28.8 kc.

Each read/write electronics assembly contains:

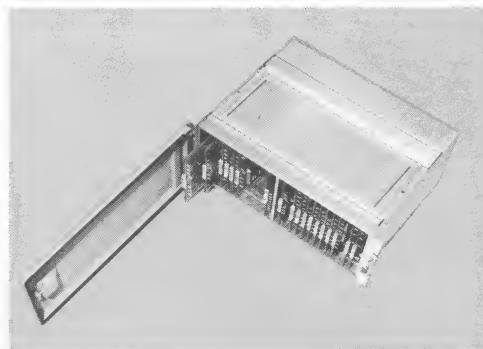
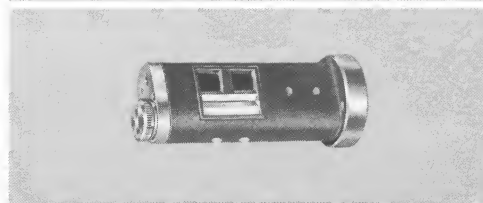
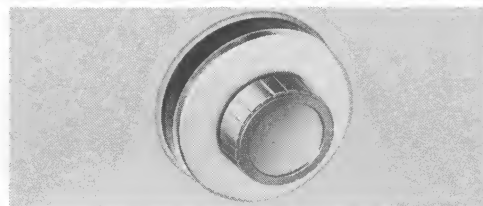
- up to eight Read/Write amplifier channels
- clock generator
- Write Inhibit electrical switching
- Erase head control
- head compensation for Read/Write (as required)
- power supply

For further information see the following Product Data Sheets:

- No. 1-401 M921A Read/Write Amplifier
- No. 1-402 MA315 Read/Write Amplifier
- No. 1-403 MSA375 Read/Write Switching Amplifier

- **SWITCHING ELECTRONICS.** Switching amplifiers are available which reduce the cost of digital magnetic tape systems by permitting time-sharing of a single Read/Write amplifier package among groups of up to four tape units.

- **CABINET.** Two standard Potter cabinets are available for housing the MT-24 transport or tape system. The new CT-120 cabinet features a "slope front" design for operator convenience. The MT-24 transport is mounted horizontally in the CT-120 cabinet, vertically in the M3340 rack cabinet. Both cabinets have a 300 cfm blower, air filter, power convenience strip and glass dust covers.



MT-24 INTERFACE CONNECTIONS

Letters refer to contact pins, connector J/P-102, EC-36 Drive Electronics Chassis:

- A. -5v run/0v stop, at 5 ma
- B. -5v reverse 0v forward, at 5 ma
- C. Stop at EOT input (place jumper to pin D)
- D. EOT Output: Not on Foil, -15v. Maximum load to ground, 5 ma. On Foil, 0v.
- E. Ready Signal: -10v at 5 ma
- F. 10v nominal servo supply sample at 2 ma
- G. Rewind Command: -5v at 10 ma
- J. Stop at BOT input (place jumper to pin K)
- K. BOT Output: Not on Foil, -15v. Maximum load to ground, 5 ma. On Foil, 0v.
- L. Chassis GND
- M. Circuit GND
- N. Run Reverse Reply: -5v at 1 ma
- P. Run Forward Reply: -5v at 1 ma
- Q. Automatic Mode Reply: -7.5v at 2 ma
- T. Capstan Speed Change Command: -5v at 5 ma
- U. +15v sample (for interrogation only) at 5 ma
- V. -15v sample (for interrogation only) at 5 ma
- W. EOT Lamp Out Signal: Out, 0v, 24 ohms to ground; On, -5v to -10v @ 5 ma
- X. Write Lock-out Switch (normally closed contact)
- Y. Write Lock-out Switch (common contact)
- Z. Write Lock-out Switch (normally open contact)

MT-36 AND MT-75 TAPE TRANSPORTS AND TAPE SYSTEMS

The MT-24 is one member of a family of vacuum-buffered tape transports providing a range of speed capabilities as follows:

MT-24 Tape Transport	1 to 36 ips
MT-36 Tape Transport	1 to 50 ips
MT-75 Tape Transport	1 to 75 ips

All these units employ the same basic design configuration, and most parts are interchangeable between models.

POTTER WORLDWIDE FIELD SERVICE AND LOGISTICS PROGRAMS

Repair centers in strategic locations within the continental United States and abroad have been established to support the entire Potter product line.

Staffed by highly-trained field representatives, these repair centers are equipped to effect on-site installation of equipments and to perform quality repair, maintenance and overhaul.

Supplementing this capability, if a customer prefers to provide his own equipment support, Potter has established standard instruction courses to train customer personnel, either at Potter or in the field.

A Spare Parts Department, backed up by an extremely large inventory, and streamlined order processing, is available for customer convenience and economy. This inventory permits the customer to realize virtual elimination of downtime as well as savings on spare parts dollars by offering expeditious delivery for replaceable parts. Delivery is available in 24 hours to meet customer emergency requirements — within 72 hours for standard parts under normal conditions. Potter also offers provisioning and logistics capabilities to meet all existing military specifications.

The Potter field service and logistics program is one of the finest in the EDP equipment industry. With reliable, quality-engineered equipment, supported by comprehensive field service, Potter guarantees satisfaction.



POTTER INSTRUMENT COMPANY, INC.

151 SUNNYSIDE BOULEVARD • PLAINVIEW, NEW YORK • 516 OVERBROOK 1-3200

MT- 120 MAGNETIC TAPE TRANSPORT AND MAGNETIC TAPE SYSTEMS



MODEL MT-120 TAPE TRANSPORT

The MT-120 Magnetic Tape Transport is a recent addition to the Potter line of high-speed digital tape memory equipment. The MT-120 features an improved vacuum buffering system which makes possible bi-directional tape speeds up to 120 ips without program restrictions. Tape loading has been simplified by use of push-button arm retraction control. Other operator features include new functional "slope-front" cabinet and quiet transport operation.

When the new MT-120 transport is combined with data electronics, the resulting magnetic tape transport system reads or writes digital data in a wide variety of computer formats. With packing densities up to 800 bpi, data transfer up to 96 kc is readily available; data transfer rates up to 240 kc (bcd) can be obtained with Potter high density recording.

FEATURES

- restriction-free programming at command rates up to 200 per second at 120 ips.
- increased vacuum buffer capacity and improved tape storage system.
- faster, more uniform start time with new drive roller circuit.
- reliable data transfer up to 240 kc (bcd)
- high precision, all-metal read-write head and trough guide assembly.
- integral DC erase head available.
- push-button arm retraction for easier, rapid reel loading.
- "push-to-retract" EOT sensor simplifies routine cleaning.
- two-stage vacuum blower for quiet operation.
- all control and amplifier electronics fully transistorized.
- compatible reels, hubs and tape sensing equipment available.
- new "slope-front" cabinet makes transport operation easier.
- vertical or horizontal mounting of transport accommodated.

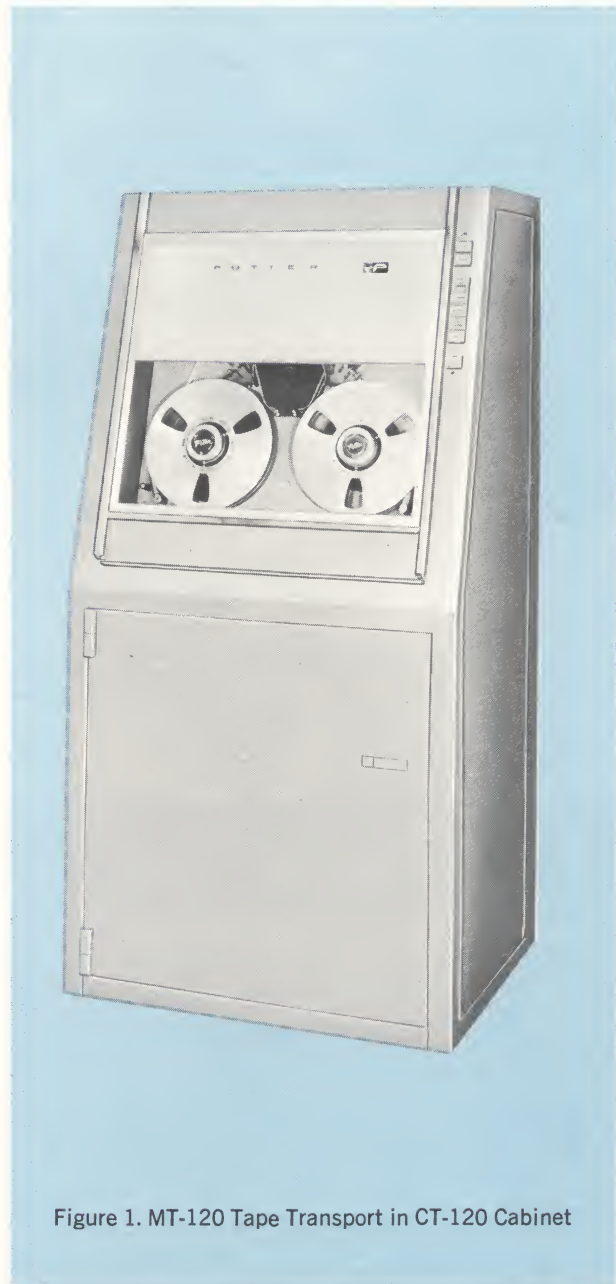


Figure 1. MT-120 Tape Transport in CT-120 Cabinet

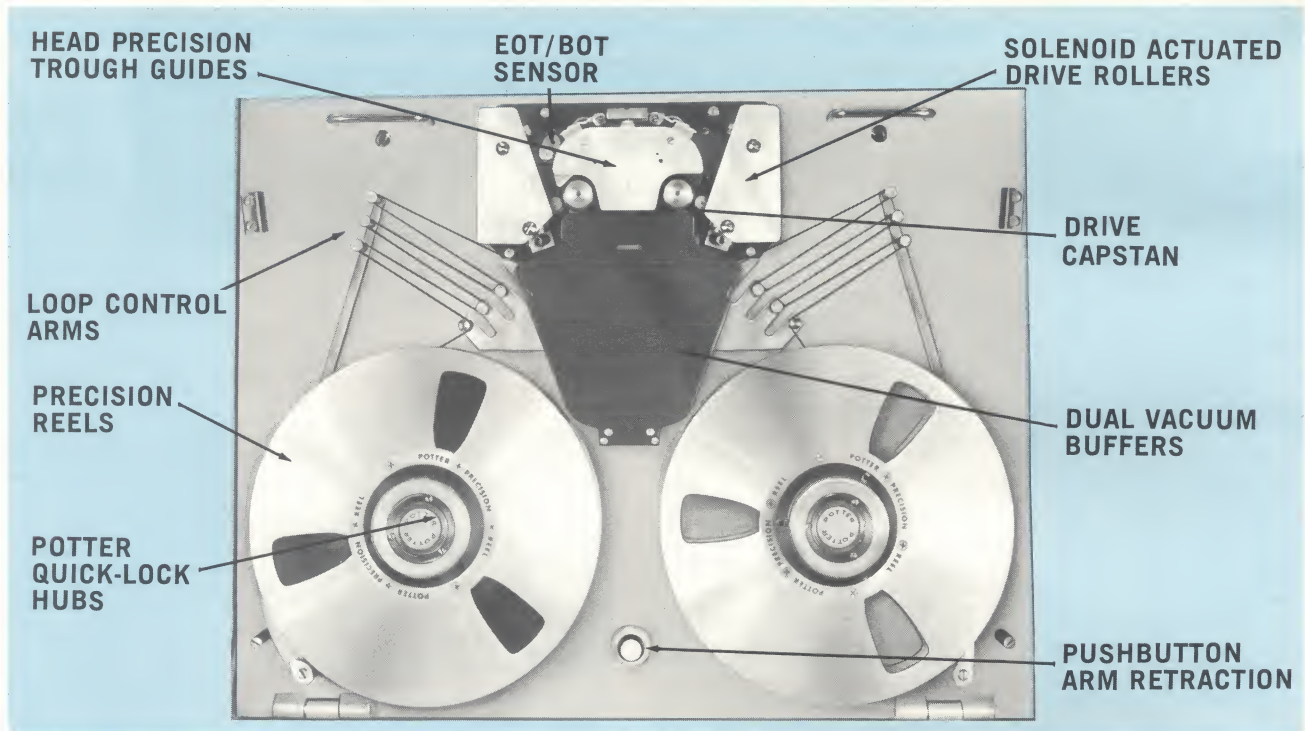


Figure 2. MT-120 Tape Drive.

MT-120 MAGNETIC TAPE TRANSPORT

The MT-120 transport includes the following as standard equipment:

- Tape drive
- Drive electronics
- Supply transformer

Accessory equipment generally supplied with MT-120 transport includes:

- Read-write magnetic heads
- Reels and hubs
- Write lock-out (write enable)
- EOT and BOT sensing
- Dust cover (or cabinet)

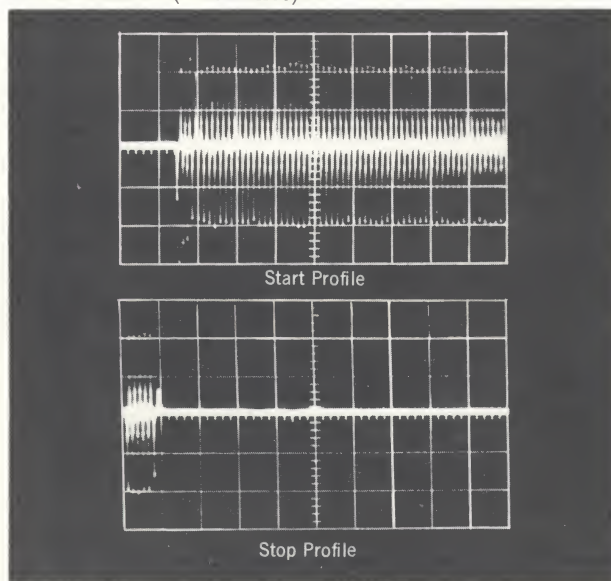


Figure 3. Typical Velocity Profiles (1 div. = 1 ms)

TAPE LOOP CONTROL

Loop control arms provide slack-loop storage and feedback for servos. Stronger arm design gives improved tape guiding and longer tape life.

VACUUM BUFFERS

High capacity dual vacuum buffers isolate loop control arms from drive roller and capstan drive system. An improvement of the Potter-pioneered vacuum buffer system, the new enlarged buffers accommodate more tape and respond rapidly and smoothly. Start-stop, reverse-stop, forward-reverse programming is accommodated at 120 ips without restriction over the entire cycling range from 0-200 commands per second. Start time is less than 3.0 ms to 120 ips $\pm 10\%$. Stop time is less than 1.5 ms from 120 ips. See Figure 3 for velocity profiles.

DRIVE ELECTRONICS

The EC-120 all solid state drive electronics assembly is a standard component of the MT-120 tape transport. This unit generates all control signals and voltages required for transport operation from computer-type or manual command signals.

DRIVE SYSTEM

Bi-directional tape motion is controlled by two drive capstans and their associated solenoid-actuated drive rollers. The drive capstans are driven by a heavy-duty, hysteresis synchronous motor to provide uniform tape speed. New current switching drive circuitry give faster, more uniform start-stop performance.

SUPPLY TRANSFORMER

The TR-120 transformer supplies all necessary voltages for operation of the MT-120 transport or tape system.



Figure 4. MT-120 Push-Button Loading.

SPEED COMBINATIONS

Four standard tape speed combinations are available:

75/225	112.5/225
100/200	120/240

Both speeds may be used in forward and reverse directions. Low speed is for Read/Write. High speed is for rewind.

TAPE LOADING

Automatic electrical retraction of loop control and low-tape sensing arms is push-button initiated. Suitable interlocking prevents inadvertent arm retraction when reel motors are energized. Limit switches at extremes of arm travel represent an added safety feature. Use of Potter "quick-lock" NARTB reel hubs further facilitate faster, easier reel loading.

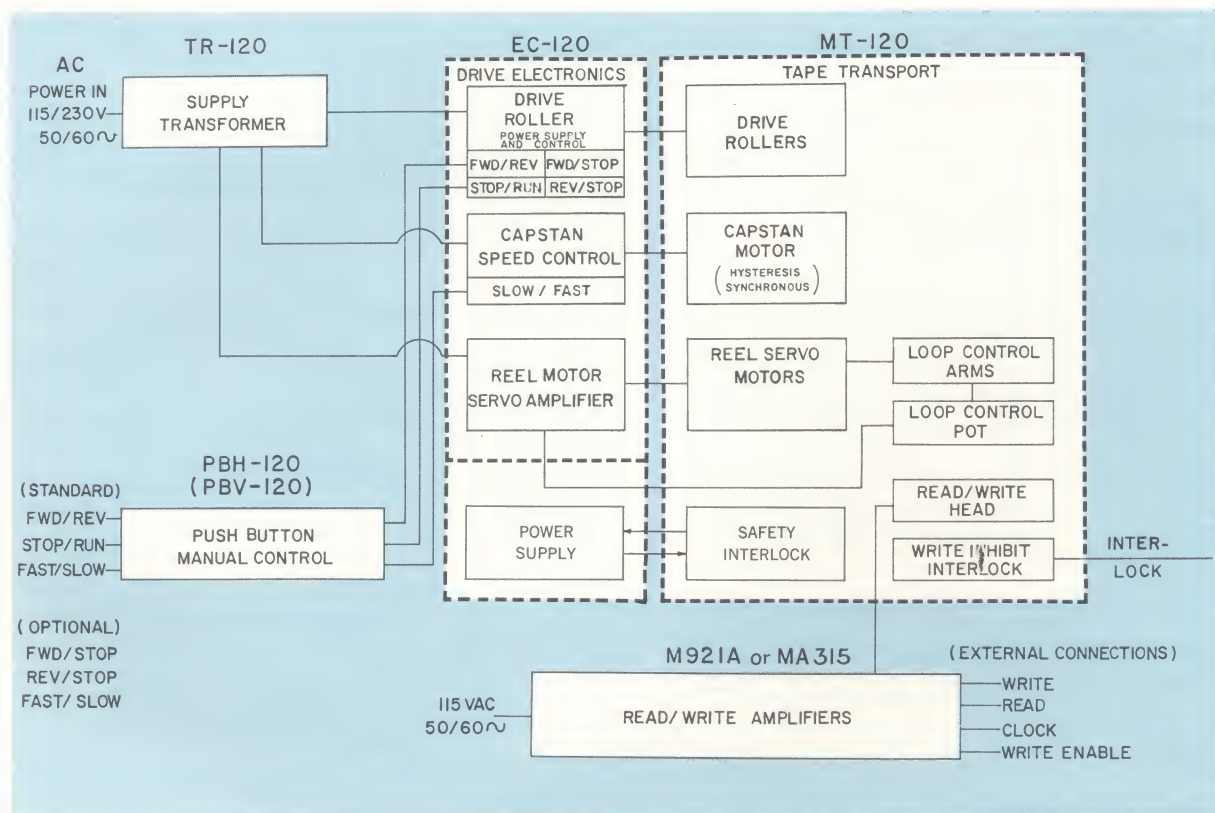


Figure 5. MT-120 Transport Function Diagram.

ACCESSORIES

MT-120 TRANSPORT ACCESSORIES

READ-WRITE HEADS

A complete selection of Potter Instrument heads is available in a wide variety of computer tape formats. These all-metal interchangeable head assemblies are precision-machined for minimum inter-channel time displacement.

REELS AND HUBS

NARTB and IBM reels and hubs are available as standard accessories with the MT-120 transport. Write lock-out for file protect is also available.

EOT/BOT SENSING

Split-post and IBM-type EOT and BOT sensing amplifiers are available to meet your requirements for positive tape control. Beginning and end-of-tape signals are bought-out for computer identification and control.

WRITE LOCK-OUT

Transport design readily accommodates write lock-out (write enable) mechanism. New electro-magnetic, non-contact type write lock-out switch design gives improved file protect performance.

MT-120 SYSTEM ACCESSORIES

READ-WRITE ELECTRONICS

Standard read-write amplifiers are available to accommodate packing densities up to 800 bpi and data transfer rates up to 96 kc. With special Potter high-density recording techniques, data transfer up to 240 kc (bcd) is obtainable.

Each read-write electronics assembly contains:

- up to 8 read-write amplifier channels
- clock generator
- write inhibit electrical switching
- erase head control
- head compensation for Read/Write (as required)
- power supply

For further information ask for the following Product Data sheets:

Product Data 1-401 M921A Read/Write Amplifier

Product Data 1-402 MA315 Read/Write Amplifier

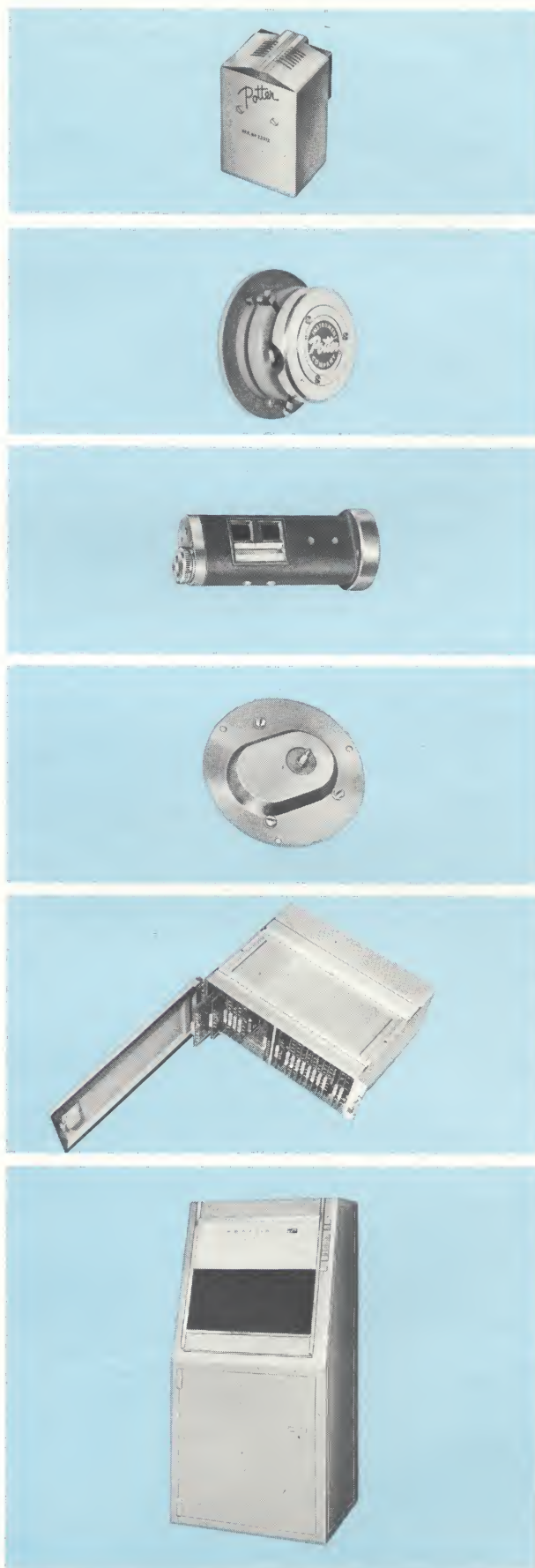
Product Data 1-403 MSA375 Switching Amplifier

MANUAL CONTROL

Manual Control Panel PHB-120 provides push button control for the MT-120 transport. The unit is equipped for standard 19" rack mounting. This unit is not required where CT-120 cabinet is specified since this cabinet includes an equivalent control panel.

CABINET

Potter offers a choice of two standard cabinets for housing the MT-120 transport or tape system. The new CT-120 cabinet features a "slope front" design for operator convenience and a built-in manual control panel (See Figure 1). The Model M3340 upright cabinet is also available (see Figure 6). The MT-120 transport is mounted horizontally in the CT-120 cabinet, vertically in the M3340 cabinet. Both cabinets have a 300 cfm blower, air filter, power convenience strip and glass dust cover.



MT-120 SPECIFICATIONS

TAPE SPEED: Forward/Reverse	120 ips max, without program restrictions
TAPE SPEED VARIATIONS	±2%
SPEED COMBINATIONS	75/225, 100/200, 112.5/225, 120/240. Both speeds may be used in forward and reverse directions. The lower speed is for Read/Write; the higher speed is for rewind.
PERFORMANCE FIGURES	at 120 ips with ½ inch, 1 ½ mil Mylar
START TIME	Less than 2.0 ms from receipt of command to start of tape motion. Less than 3 ms from receipt of command to within ±10% of nominal tape speed.
START DISTANCE	Over a cycling range of 0-200 commands per second, tape travels less than 0.160" ±0.040" at 3 ms after receipt of start command.
STOP TIME	Less than 1.5 ms.
STOP DISTANCE	Tape travel is 0.110 ± 0.03 inches max.
COMMAND REPETITION RATE	0 to 200 commands per second.
WOW & FLUTTER	Less than 2% rms at 120 ips (steady running).
INTERCHANNEL TIME DISPLACEMENT	Static: 3 microseconds, maximum at 120 ips Dynamic ±1 microsecond Total: 4 microseconds, maximum
TAPE WIDTHS	½ or 1 inch.
TAPE TYPE	1, 1 ½ mil Mylar
TAPE REELS	Potter precision NARTB or IBM 10 ½" dia. reels.
HUBS	Potter NARTB-type "Quick-Lock" or IBM hubs.
TAPE THREADING	In line, quick, simple; push-button control of electrically operated retraction mechanism for loop and low tape sensoring arms.
REMOTE CONTROL INPUTS	Three sets of control lines are available for remote control of the MT-120: Standard: 0 volts fwd; -5 volts @ 5 ma rev. 0 volts stop; -5 volts @ 5 ma run 0 volts low; -5 volts @ 5 ma high Optional: 0 volts stop; -5 volts @ 5 ma fwd. 0 volts stop; -5 volts @ 5 ma rev. 0 volts low; -5 volts @ 5 ma high
CONDITION INDICATION	Low tape: N.O. contact — contact closes on low tape condition Write lockout: form C contact (optional) End-of-tape and beginning-of-tape sensors (optional): • split post • photoreflective • amplifiers for either photoreflective or split post -15 volts @ 5 ma; not sense; -0 volts @ 5 ma: sense Ready line: 0 volts not ready; -10 volts ready (monitors all power supplies)
CIRCUITS	All control circuits completely transistorized with modular construction mounted on glass epoxy plug-in cards.
POWER	115 volts, 60 cycles; 9 amp. standby, 16 amp. peak (230 volts, 50 cycles optional)
(Transport and Drive Electronics)	
AMBIENT TEMPERATURE (Operating)	32°F. to 125°F.

MT-120 TAPE SYSTEMS

PHYSICAL DATA

Model No.	Component Description	Dimensions (in.)			Weight (lbs.)
		High	Wide	Deep	
MT-120	Tape Transport	24½	19	11	160
EC-120	Drive Electronics	6¾	19	18	35
PBH-120	Manual Control	3¾	19	6½	10
CT-120	Cabinet	63	30¾	28½	285
M3340	Cabinet	76	27	35	415
TR-120	Transformer	9	13½	8	75

OPTIONAL EQUIPMENT

1. Manual Control Unit: Pushbutton controls (Model PBH-120) for standard rack mounting and for application with the M3340 Rack Cabinet. Controls include OFF, STANDBY, AUTOMATIC FWD, REVERSE, FAST FORWARD, REVERSE, and EOT/BOT INDICATOR. The same controls are built into the CT-120 "slope front" cabinet and furnished as standard equipment.
2. DC Erase Head.
3. Read/Write single-gap heads, dual-gap interlaced Read/Write heads, dual-gap simultaneous Read-While-Write heads.
4. Read and/or Write Amplifier electronics (Models M921A, MA315 and MSA375).
5. Cabinet and panel color combinations.
6. Upright cabinet, Model M3340 (Figure 6); slope front cabinet, Model CT-120 (Figure 1).
7. EOT/BOT sensing: photoelectric or split-post.
8. Relay-operated system for remote control of main power turn on/turn off.
9. Non-contact type Write Lock-out (Write Enable).
10. Address Selector.

POTTER WORLDWIDE FIELD SERVICE AND LOGISTICS PROGRAMS

Repair centers in strategic locations within the continental United States and abroad have been established to support the entire Potter product line.

Staffed by highly-trained field representatives, these repair centers are equipped to effect on-site installation of equipments and to perform quality repair, maintenance and overhaul.

Supplementing this capability, if a customer prefers to provide his own equipment support, Potter has established standard instruction courses to train customer personnel, either at Potter or in the field.

A Spare Parts Department, backed up by an extremely large inventory, and streamlined order processing, is available for customer convenience and economy. This

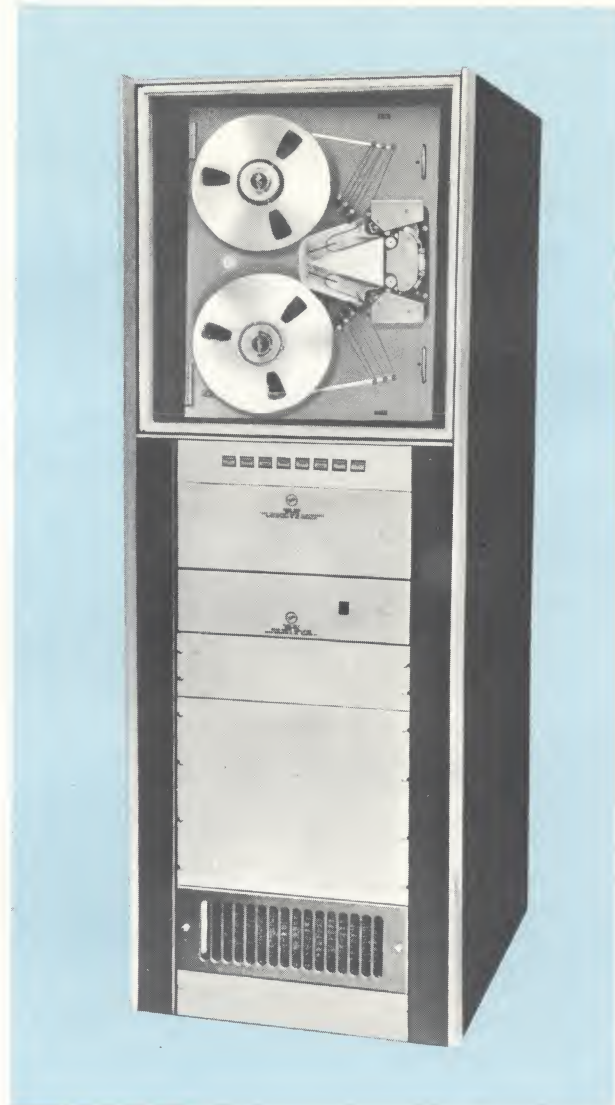


Figure 6. MT-120 Magnetic Tape System in M3340 Cabinet

inventory permits the customer to realize virtual elimination of downtime as well as savings on spare parts dollars by offering expeditious delivery for replaceable parts. Delivery is available in 24 hours to meet customer emergency requirements — within 72 hours for standard parts under normal conditions. Potter also offers provisioning and logistics capabilities to meet all existing military specifications.

The Potter field service and logistics program is one of the finest in the EDP equipment industry. With reliable, quality-engineered equipment, supported by comprehensive field service, Potter guarantees satisfaction.

Information subject to change without notice.



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MT-36 INTERFACE CONNECTIONS

Letters refer to contact pins, connector J/P-102, EC-36 Drive Electronics Chassis:

- A. -5v run/0v stop, at 5 ma
- B. -5v reverse/0v forward, at 5 ma
- C. Stop at EOT input (place jumper to pin D)
- D. EOT Output: Not on Foil, -5v at 5 ma maximum; On Foil, 0v
- E. Ready Signal: -10v at 10 ma
- F. 10v servo supply sample at 2 ma
- G. Rewind Command: -5 at 10 ma
- J. Stop at BOT input (place jumper to pin K)
- K. BOT Output: Not on Foil, -5v at 5 ma maximum; On Foil, 0v
- L. Chassis GND
- M. Circuit GND
- N. Run Reverse Reply: -5v at 1 ma
- P. Run Forward Reply: -5v at 1 ma
- Q. Automatic Mode Reply: -7.5v at 2 ma
- T. Capstan Speed Change Command: -5v at 5 ma
- U. +15v sample (for interrogation only) at 5 ma
- V. -15v sample (for interrogation only) at 5 ma
- W. EOT Lamp Out Signal: Out, 0v, 24 ohms to ground; On, -5v to -10v @ 5 ma
- X. Write Lock-out Switch (normally closed contact)
- Y. Write Lock-out Switch (common contact)
- Z. Write Lock-out Switch (normally open contact)

MT-24 AND MT-75 TAPE TRANSPORTS AND TAPE SYSTEMS

The MT-36 is one member of a family of vacuum-buffered tape transports providing a range of speed capabilities as follows:

MT-24 Tape Transport	1 to 36 ips
MT-36 Tape Transport	1 to 50 ips
MT-75 Tape Transport	1 to 75 ips

All these units employ the same basic design configuration, and most parts are interchangeable between models.

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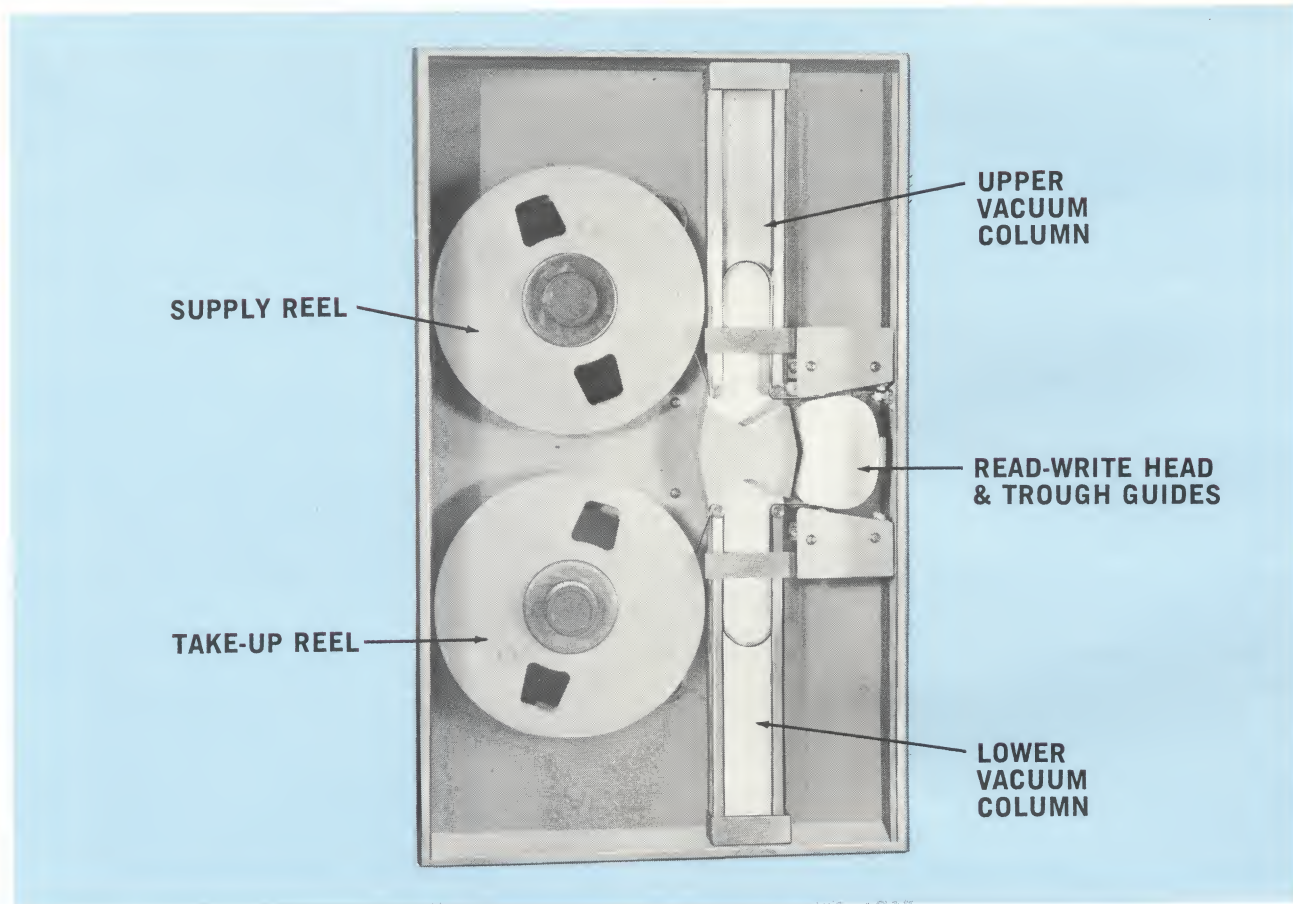


Figure 2. MT-36 Tape Drive

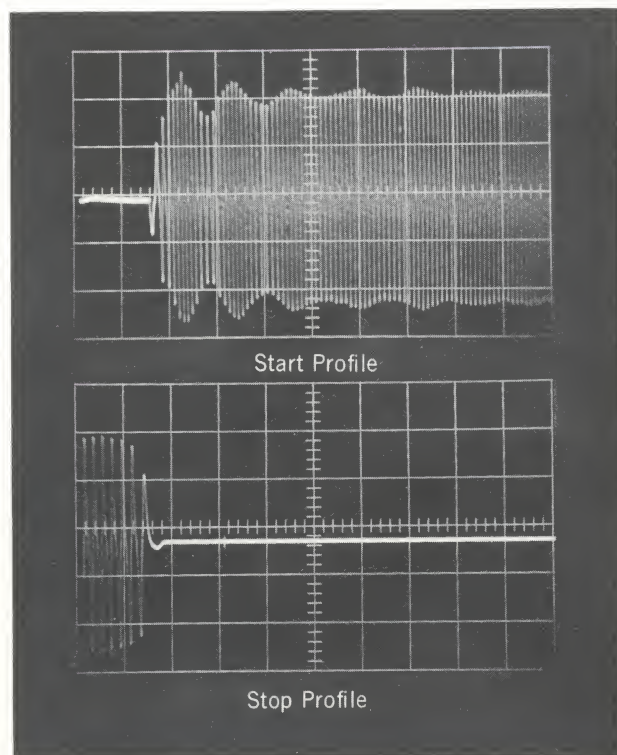


Figure 3. MT-36 Typical Velocity Profiles (1 div. = 1 ms)

VACUUM COLUMN STORAGE

An extremely simple dual vacuum column tape storage system is incorporated in the MT-36 design—a feature normally associated with the most costly tape transport systems. Ample tape storage in the vacuum reservoirs provides restriction-free reading and writing up to 36 ips. Photoelectric loop sensing reliably controls amount of tape in both vacuum columns. Transparent vacuum column covers are readily detachable for easy access to column area during routine cleaning. The vacuum blower is soundproofed for exceptionally quiet operation.

TAPE DRIVE SYSTEM

The MT-36 utilizes the Potter fast-response drive system which has become a standard of dependability in the EDP field. Tape motion is controlled by two drive capacitors with associated solenoid-actuated drive rollers. New vacuum hold-down of tape in the trough guide area provides improved tape control. The slotted, vacuum trough guides, which are precision-shaped for optimum tape guidance, hold dynamic skew to ± 3 microseconds maximum at 36 ips. Start time is 5 milliseconds to within $\pm 10\%$ to rated speed; stop time is less than 1.5 milliseconds, with smooth velocity profiles. (See Figure 3)

MT-36 MAGNETIC TAPE TRANSPORT AND MAGNETIC TAPE SYSTEMS



INTRODUCTION

The new Potter MT-36 Magnetic Tape Transport is a low-cost unit designed for applications requiring moderate data transfer rates. It is particularly well-suited for use with small and medium scale computers, in mass storage and sequential access applications for which high-priced, high-performance transports cannot be justified. The MT-36 provides many features normally found only in more expensive transports. New over-and-under vacuum column tape storage is used in combination with Potter's precision tape drive system. Vacuum cleaning and vacuum tape drag before the read-write head assure high operating reliability.

MT-36 tape systems, which consist of an MT-36 tape transport, manual control unit, and suitable read-write electronics, are capable of reading tapes prepared on the IBM 7330. Conversely, tapes written on the MT-36 can be read on a 7330. Packing densities of 200, 556, and 800 bpi can be accommodated. Other conventional tape formats utilizing $\frac{1}{2}$ or 1 inch tape are also available.

A read-write speed of 36 ips is standard with the MT-36, with fast two and one-half minute rewind. Start-stop profiles are smooth and *program restriction free over a command frequency rate up to 200 per second*. Other MT-36 design innovations provide simplified tape threading, convenient transport adjustments, and easier maintenance.

FEATURES

- highest performance and reliability for lowest price
- up to 40 kc data transfer (800 bpi)
- compatible with 7330 and all IBM packing densities
- low inter-channel time displacement
- fast, smooth start-stop performance
- new vacuum cleaning incorporated in trough guides
- new over-and-under vacuum storage system
- vacuum muffled for silent operation
- fast two and one-half minute rewind
- tape loading in 15 seconds
- rapid, consistent tape stops with new vacuum tape drag

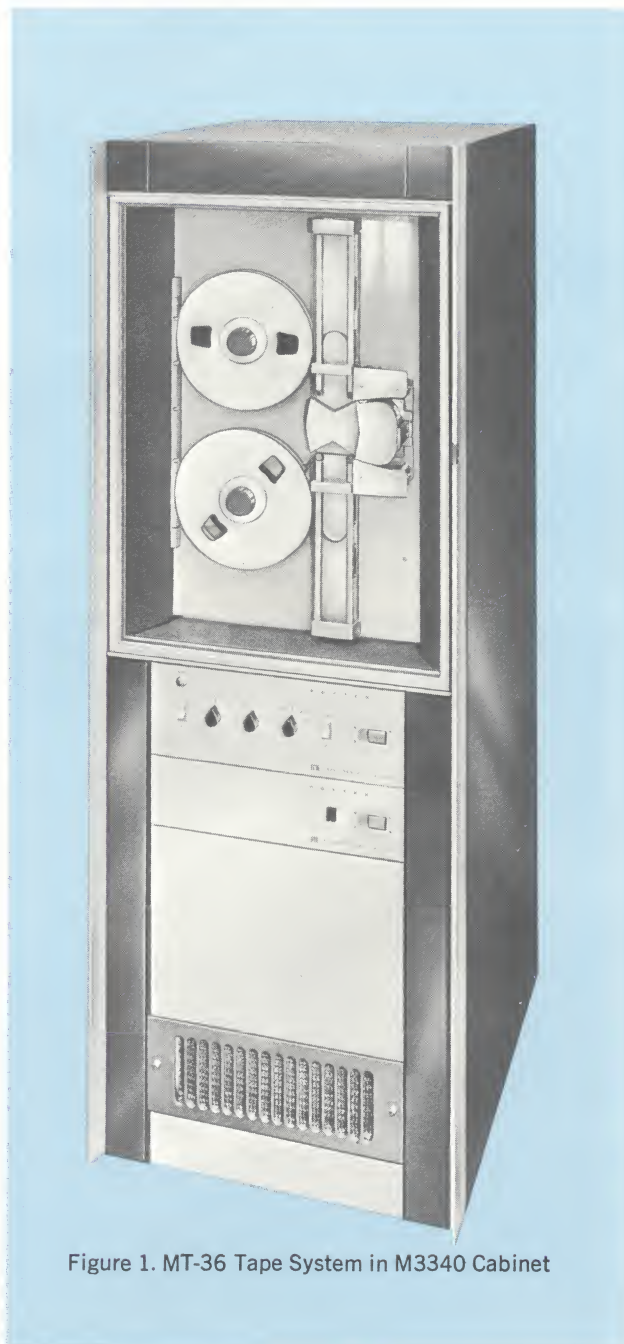


Figure 1. MT-36 Tape System in M3340 Cabinet

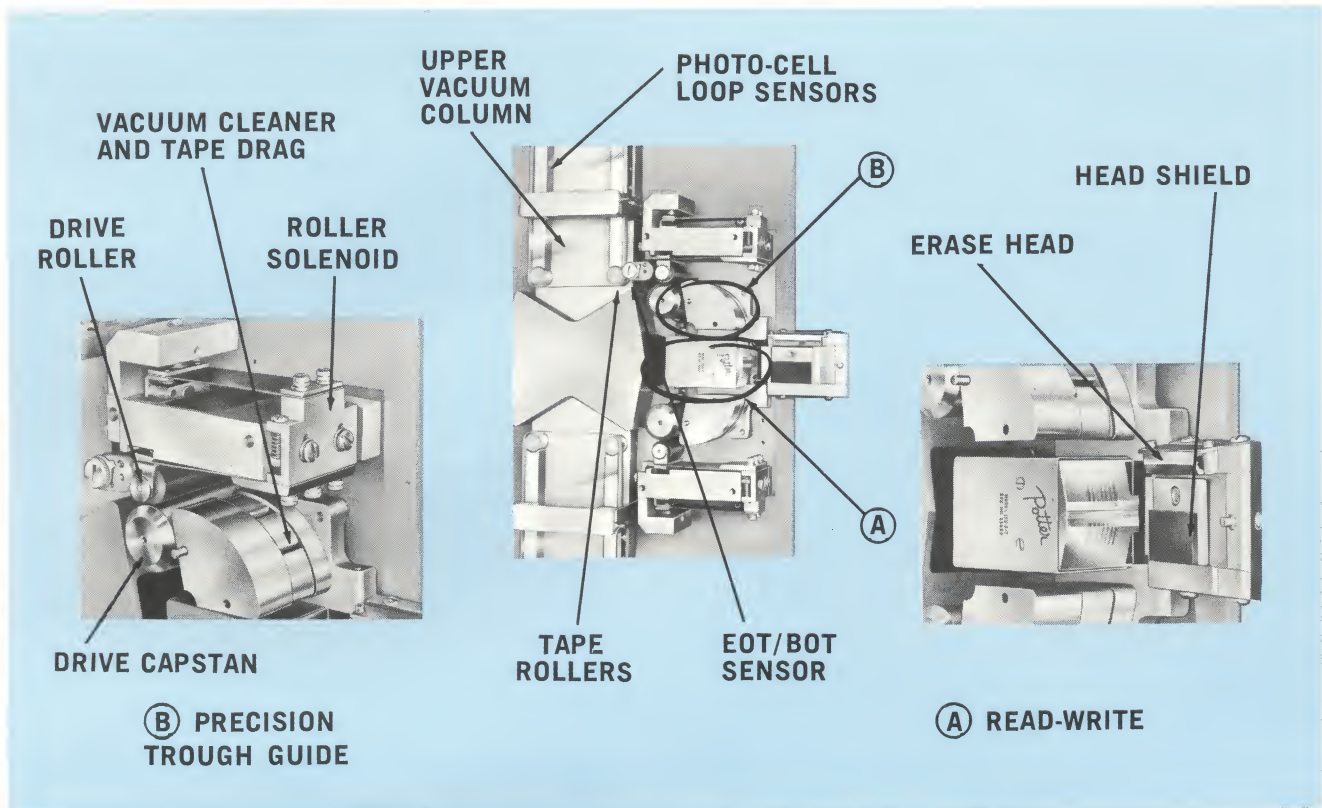


Figure 4. MT-36 Tape Drive System

DRIVE ELECTRONICS & CONTROL

All MT-36 transport functions are controlled by a combined drive electronics and manual control assembly which is supplied with the transport. This compact package contains all control electronics, together with necessary power supplies for automatic or manual operation and checkout. Electronics are solid state, and feature

printed circuit, plug-in modules. The hinged front door gives immediate access to all components. Controls include a power on-off switch and three operating mode selector switches: "load-manual-automatic", "reverse-stop-forward", and "fast reverse-stop-fast forward."

For remote operation, the LOAD-MANUAL-AUTOMATIC switch is placed in the AUTOMATIC position; other controls in the STOP position.

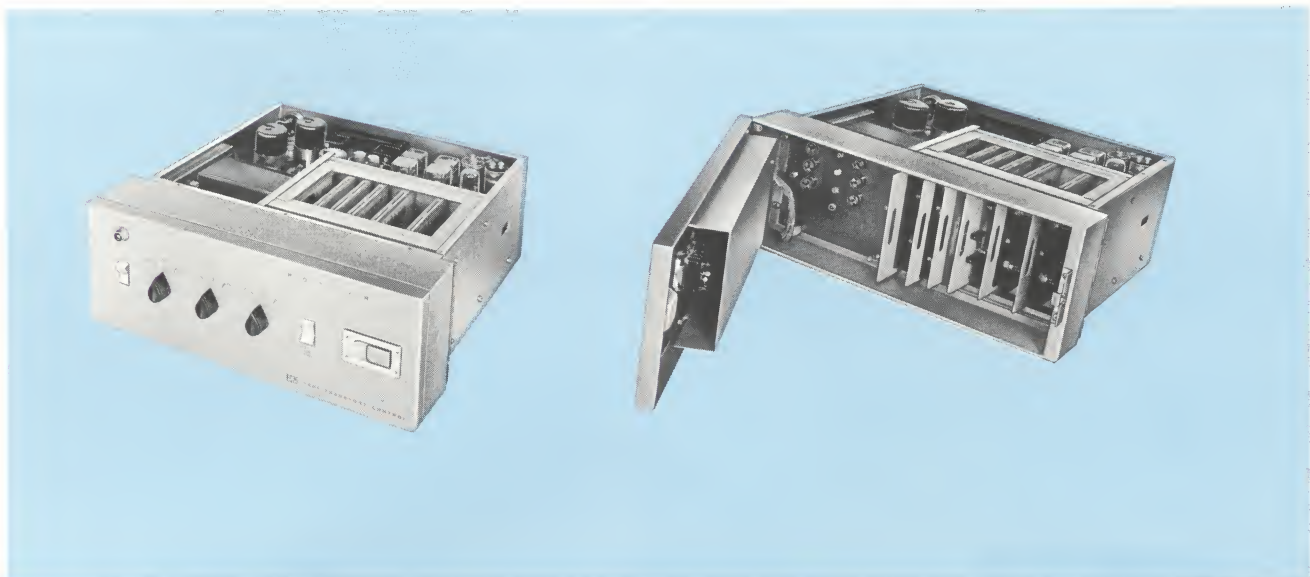


Figure 5. EC-36 Drive Electronics & Control

ACCESSORIES

MT-36 TRANSPORT ACCESSORIES

• **READ-WRITE HEADS** — A complete selection of magnetic heads is available including heads for IBM seven channel format. Heads are all-metal, precision fabricated for maximum tape life and minimum interchannel time displacement.

• **REELS & HUBS** — IBM-type reels and hubs are standard equipment on MT-36 transports. Reel/hub combinations of other manufacturers can also be accommodated. Special Potter NARTB reel and "Quick-lock" hubs are available for one-inch tapes.

• **EOT/BOT SENSING** — Photoreflective (IBM-type) end-of-tape and beginning-of-tape sensing is available for reliable MT-36 tape control.

• **WRITE CONTROL** — A Write Lockup (Write Enable) switch is available for use with file protect rings on IBM or NARTB reels.

MT-36 SYSTEM ACCESSORIES

• **READ-WRITE ELECTRONICS** — Standard amplifiers are available to accommodate packing densities up to 800 bpi and data transfer rates up to 40 kc.

Each read-write electronics assembly contains:

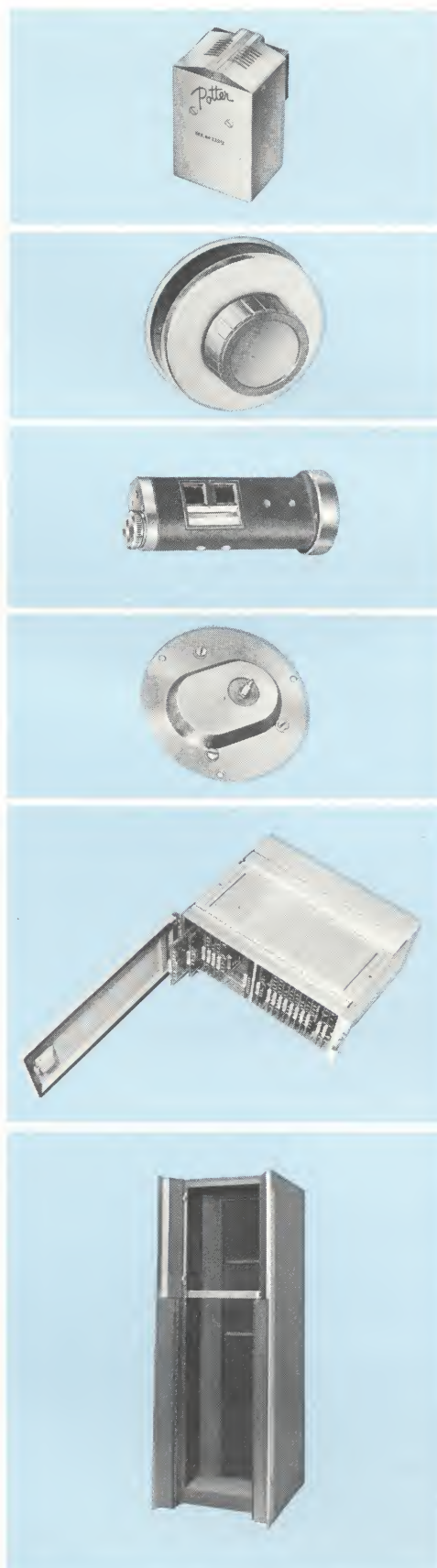
- up to eight read-write amplifier channels
- clock generator
- Write Inhibit electrical switching
- erase head control
- head compensation for read-write (as required)
- power supply

For further information see the following Product Data Sheets:

- No. 1-401 M921A Read/Write Amplifier
- No. 1-402 MA315 Read/Write Amplifier
- No. 1-403 MSA375 Read/Write Switching Amplifier

• **SWITCHING ELECTRONICS** — Switching amplifiers are available which reduce the cost of digital magnetic tape systems by permitting time-sharing of a single Read/Write amplifier package among groups of up to four tape units.

• **CABINET** — A special variation of Potter's standard M3340 rack cabinet accommodates the MT-36 transport and accessories listed above, providing for a complete, self-contained tape system. The sturdy construction of this cabinet permits full swing-out of the MT-36 transport. Standard 19-inch mounting rails provide solid mounting support for drive electronics and read-write amplifier electronics assemblies.



MT-36 SPECIFICATIONS

TAPE SPEEDS: Single speed	30 & 36 ips standard; other speeds available up to 50 ips
Dual speed	combinations in a ratio of 2:1, 3:1, 4:1 and 6:1 available
TAPE SPEED VARIATIONS	±2%
TAPE REWIND	approximately 2½ minutes for full 2400 foot reel
TYPICAL PERFORMANCE	at 36 ips with ½-inch 1.5 mil Mylar tape:
START TIME	5 ms from receipt of command to within ±10% of tape speed
START DISTANCE	over cycling range of 0-200 commands/second tape travels 0.085" ± .020" 5 ms after receipt of command
STOP TIME	less than 1.5 ms
STOP DISTANCE	0.030" ± 0.015"
COMMAND REPETITION RATE	Start/stop or forward/reverse 0-200 commands per second, 5 milliseconds between commands for performance within specifications.
WOW & FLUTTER	less than 2% rms at 36 ips
INTERCHANNEL TIME DISPLACEMENT	Static: 8 microseconds maximum
(at 36 ips), any two channels, ½" tape	Dynamic: ±3 microseconds
	Total: 11 microseconds, maximum
TAPE WIDTHS	½" or 1"
TAPE TYPE	1 or 1½ mil Mylar
TAPE REELS	IBM type 10½" reels and hubs standard for ½" tapes. Potter NARTB-type reels and special "Quick-lock" hubs standard for 1" tapes; other reel/hub combinations available
TAPE LOADING	15 seconds-average tape loading time
REMOTE CONTROL INPUTS	Run/Stop; Forward/Reverse; Normal Speed/Rewind Speed; Speed Control High/Low. All 0v/ - 5v @ 6 ma d.c. level
CONDITION INDICATION	EOT/BOT Sensing Ready Forward Reply Reverse Reply Automatic-Manual Write Lockout (Type C contact) Power Supply
ELECTRONICS	all control circuits completely transistorized; modular plug-in construction used throughout

PHYSICAL DATA:

	Dimensions			
	High (in.)	Wide (in.)	Deep (in.)	Weight (lbs.)
MT-36 Tape Transport	31½	19	11	83
EC-36 Drive Electronics & Control	7	19	19	55
M3340 Cabinet	76	27	35	415
POWER	115 volts ±10%, 60 cycles, 600 watts, 875 watts, peak; 230 volts, 50 cycles, optional			
AMBIENT TEMPERATURE (Operating)	32°F to 125°F			

MT-75 MAGNETIC TAPE TRANSPORT AND MAGNETIC TAPE SYSTEMS



INTRODUCTION

The MT-75 Magnetic Tape Transport is the newest addition to the line of Potter vacuum-column, digital tape handlers. Potter offers a complete line of high-performance, vacuum-column magnetic tape transports featuring packing densities to 800 bpi.

The MT-75 is designed for use with small- and medium-scale computers, in mass storage, and for sequential access application where high-priced transports cannot be justified.

The MT-75 operates at a speed of 75 ips, with a two and one-half minute rewind; and data transfer rates to 60 kc (bcd). Start/Stop profiles are smooth and program restriction free over a command frequency rate up to 200 per second. In addition to IBM packing densities of 200, 556 and 800 bpi, other formats utilizing ½-inch and 1-inch tape can be accommodated.

FEATURES

- Highest performance and reliability at lowest cost
- Up to 60 kc data transfer
- Compatible with IBM 729 series at all ½-inch IBM packing densities
- Fast, smooth Start/Stop performance
- Rapid consistent tape stops with new vacuum tape drag
- Over-and-under vacuum storage system
- New vacuum cleaning incorporated in trough guides
- Primary and secondary vacuum buffers
- Muffled vacuum blower for silent operation
- Low interchannel time displacement
- Tape loading in fifteen seconds
- Fast two and one-half minute rewind

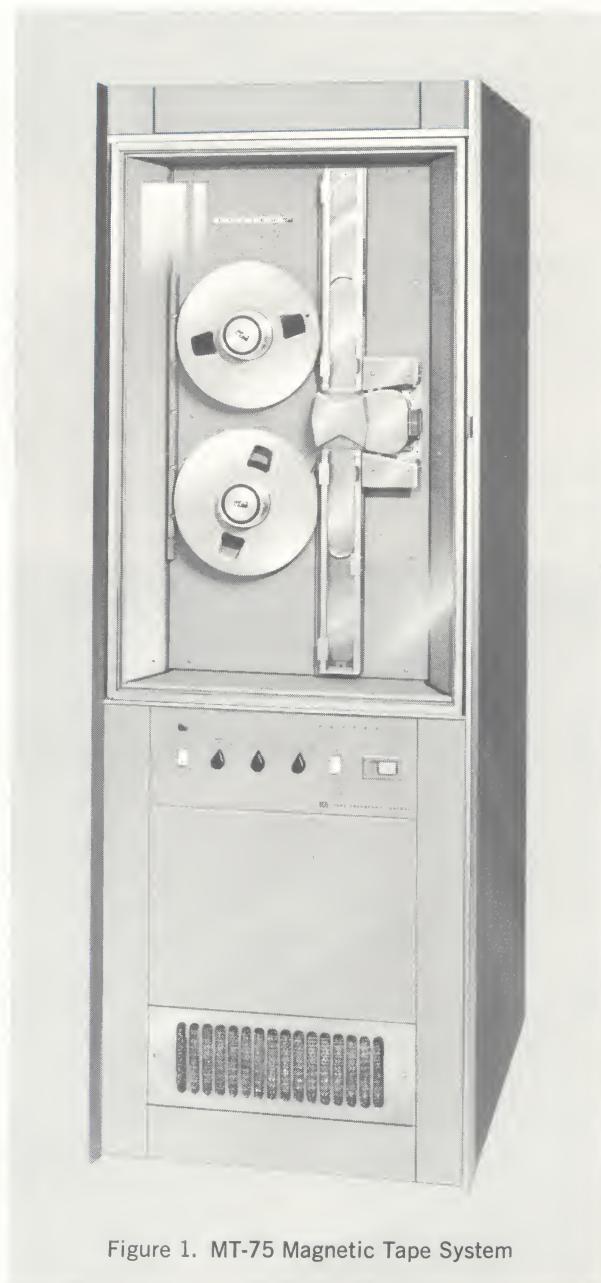


Figure 1. MT-75 Magnetic Tape System

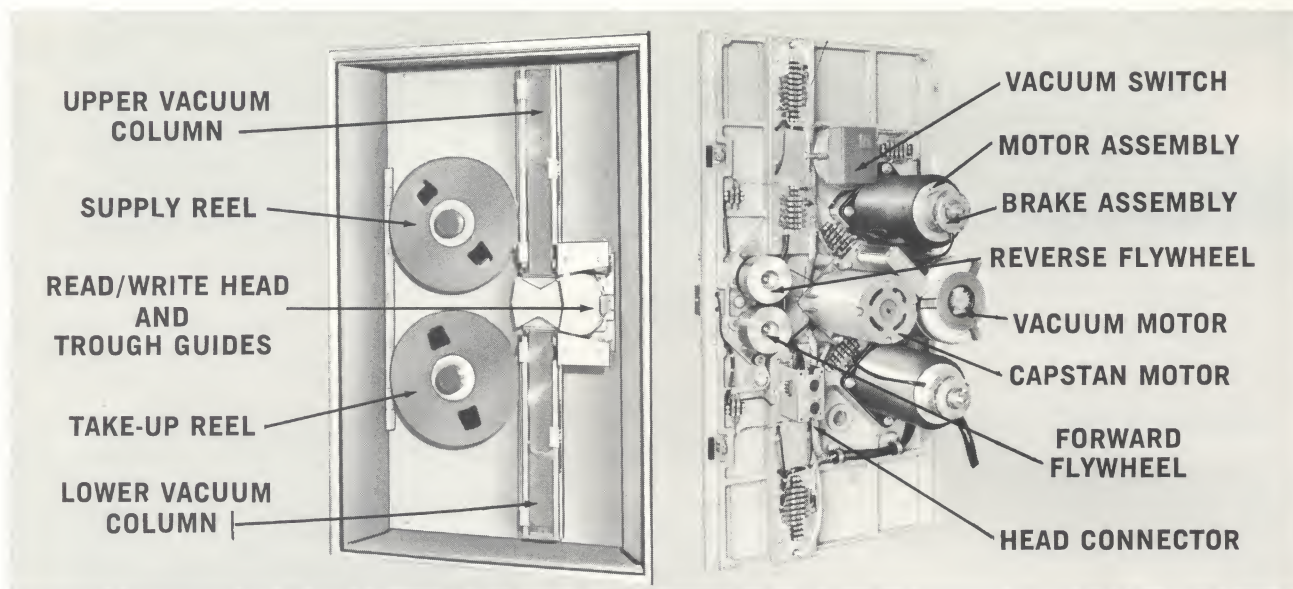


Figure 2. MT-75 Magnetic Tape Drive

DESIGN FEATURES

The MT-75 Tape Transport incorporates several outstanding design features which simplify overall operation, improve reliability and reduce service costs. Tension arms have been replaced by a dual under-and-over vacuum-column tape storage system, used in combination with Potter's precision tape drive system. Ample storage in the vacuum reservoirs provide restriction-free reading and writing. Vacuum tape cleaning and vacuum tape drag before the Read/Write head assure high operating reliability.

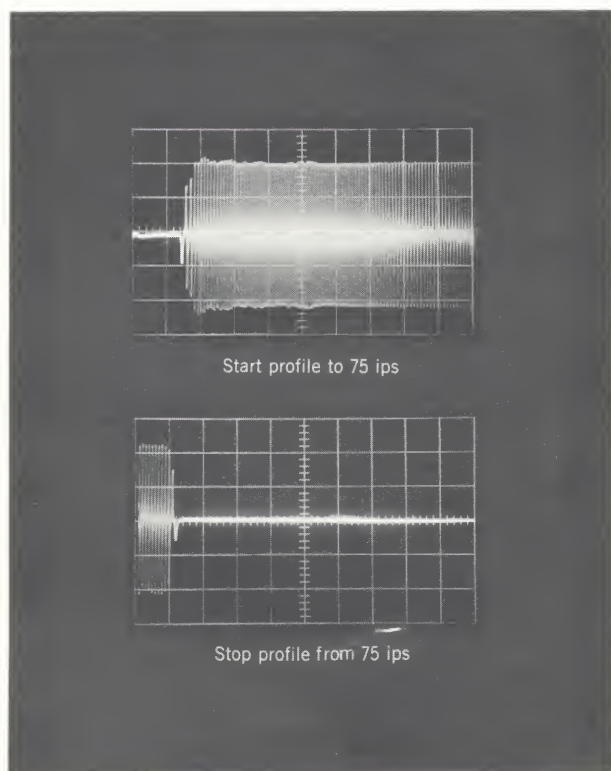


Figure 3. Typical Velocity Profiles (1 div. = 1 ms)

Secondary buffers integrally designed into the vacuum columns provide extremely fast velocity stabilization. Photoelectric loop sensing reliably controls the amount of tape in both vacuum columns. The vacuum column covers are hinged for easy access to the column area for routine cleaning.

New vacuum hold-down of tape in the trough guide area provides improved tape control. The convoluted vacuum trough guides, precision-shaped for optimum tape guidance, hold dynamic skew to ± 1.5 microseconds, maximum, at 75 ips. Start time is 3 milliseconds to within 10% of rated speed; stop time is less than 1.5 ms with smooth velocity profiles.

Integrated mechanical design throughout results in accessibility for easy maintenance. The main casting is designed to incorporate bearing mounts, vacuum columns and other components. This minimizes the number of component parts and provides simpler operation, maintenance and longer life.

The Erase Head is positioned to erase through the back of the tape, thus reducing tape wear.

Grouped control functions result in trouble-free switching.

The unit is self-checking. Safety interlock is provided for loss of vacuum, the power supply is cut off, the computer is signaled, and the tape transport stops.

DRIVE ELECTRONICS & CONTROL PANEL (EC-75)

All MT-75 transport functions are controlled by a combined drive electronics and manual control assembly (EC-75) supplied with the transport. This compact package contains all electronics, together with necessary power supplies for automatic or manual operation. Electronics are solid-state and feature printed circuit plug-in modules. A hinged front door gives immediate access to plug-in modules.

For remote operation, the LOAD-MANUAL-AUTOMATIC switch is placed in the AUTOMATIC position; other controls in the STOP position.

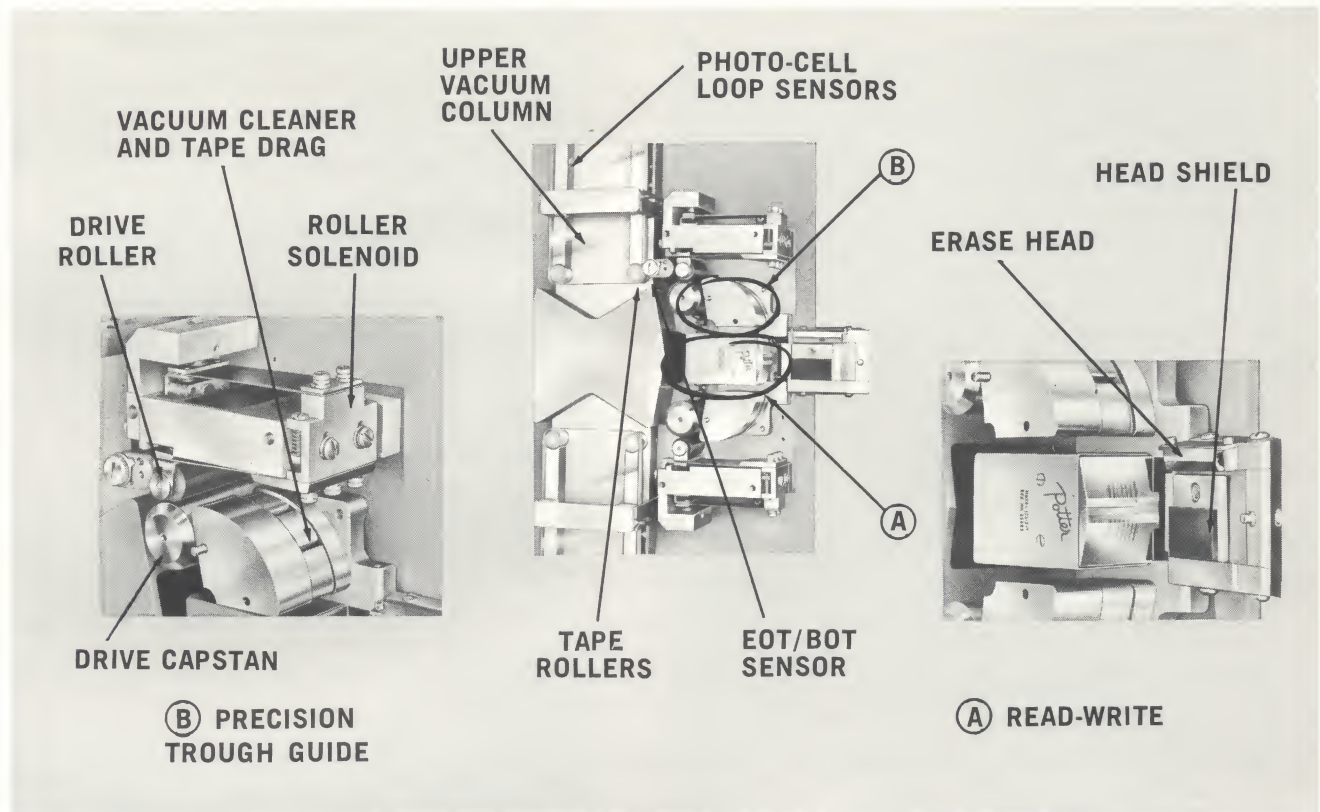


Figure 4. MT-75 Tape Drive Assembly

OPERATING CONTROLS

Three Rotary Position Switches

REVERSE/STOP/FORWARD/;
FAST REVERSE/STOP/FAST FORWARD
LOAD/MANUAL/AUTOMATIC

One Push Switch ON/OFF

One Momentary Switch UNLOAD/LOAD POINT

New type interlock switches protect equipment from operator error by prohibiting rapid switching from FAST FORWARD to FAST REVERSE.

The Potter vacuum column tape handler incorporates the simplest technique for loading and threading tape. Complete reel loading and tape threading can be accomplished in only fifteen seconds.

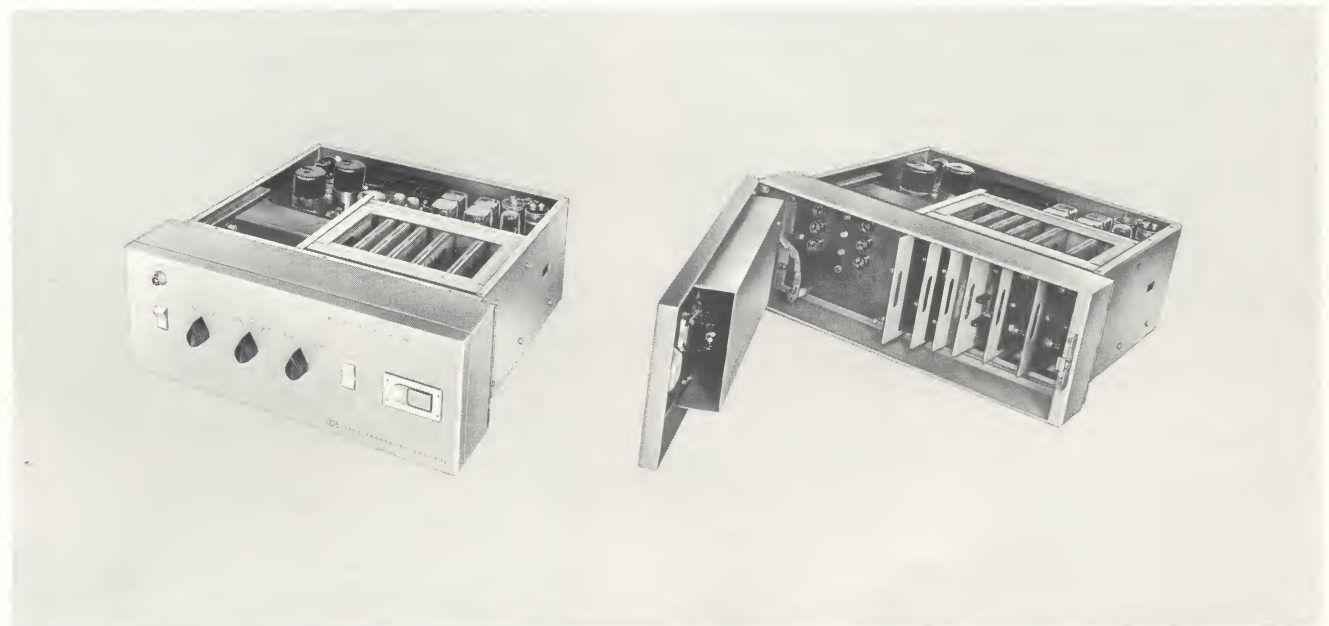


Figure 5. EC-75 Drive Electronics and Control

ACCESSORIES

MT-75 TRANSPORT ACCESSORIES

READ-WRITE HEADS

A complete selection of Potter magnetic heads is available for IBM 7-channel and other formats. Heads are all-metal and precision-machined to stringent specifications for maximum tape life and minimum interchannel time displacement.

REELS AND HUBS

IBM-type reels and hubs are standard equipment on MT-75 transports. Reel/hub combinations of other manufacturers can also be accommodated. Special Potter NAB reels and QUICK-LOCK® hubs are available for one-inch tapes.

EOT/BOT SENSING

Photoreflective (IBM-type) end-of-tape and beginning-of-tape sensing is available for reliable MT-75 tape control.

WRITE CONTROL

A Write Lock-out (write enable) switch is available for use with file protect rings on IBM or NARTB reels.

MT-75 SYSTEM ACCESSORIES

READ-WRITE ELECTRONICS

Standard amplifiers are available to accommodate packing densities up to 800 bpi and data rates transfer up to 60 kc.

Each Read/Write electronics assembly contains:

- up to 8 Read/Write amplifier channels
- Clock Generator
- Write Inhibit electrical switching
- Erase Head control (as required)
- Head Compensation for Read/Write (as required)
- Power Supply

For further information see the following Product Data Sheets:

- No. 1-401 M921A Read/Write Amplifier
- No. 1-402 MA315 Read/Write Amplifier
- No. 1-403 MSA375 Read/Write Switching Amplifier

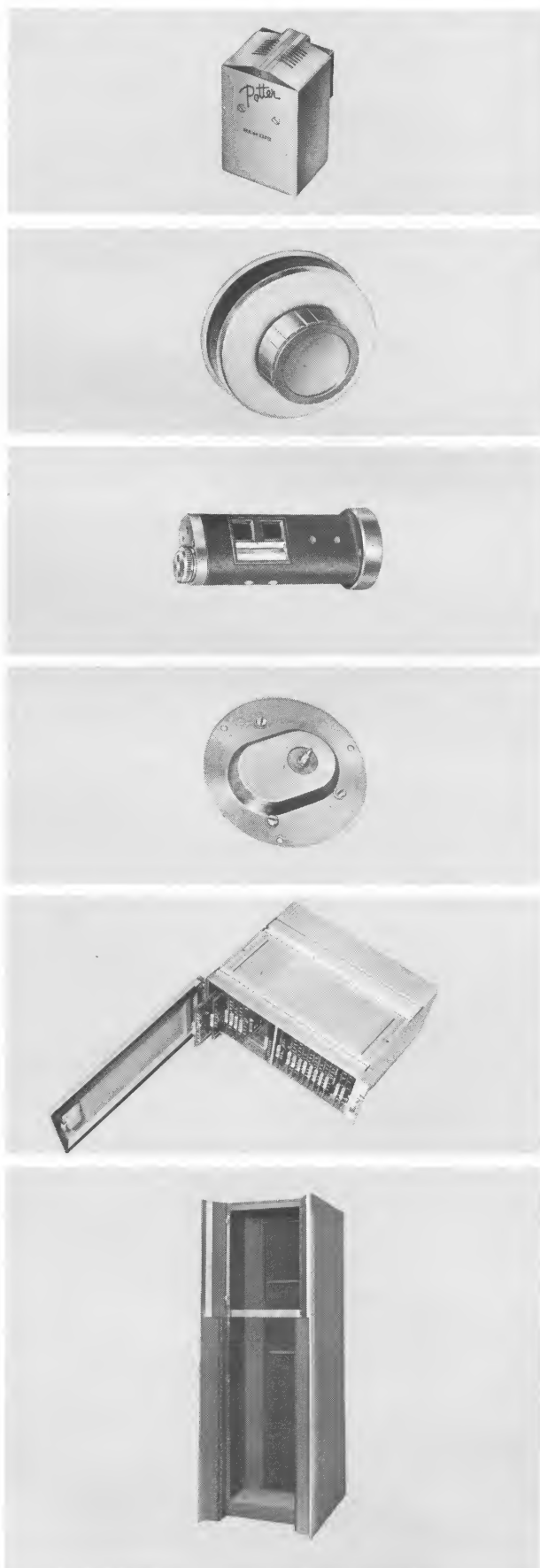
SWITCHING ELECTRONICS

Switching amplifiers are available which reduce the cost of digital magnetic tape systems by permitting time-sharing of a single Read/Write amplifier package among groups of up to four tape units.

CABINET

A special variation of Potter's standard M3340 rack cabinet accommodates the MT-75 Tape Transport and accessories, providing for a complete, self-contained tape system. The sturdy construction of this cabinet permits full swing-out of the MT-75 transport. Standard 19-inch mounting rails give solid mounting support for drive electronics and Read/Write amplifier electronics assemblies.

*Patent applied for. QUICK-LOCK is a trademark of Potter Instrument Company, Inc.



MT-75 SPECIFICATIONS

TAPE SPEEDS	60 and 75 ips standard; other speeds available to 75 ips			
TAPE SPEED VARIATIONS	±2%			
TAPE REWIND	approximately two and one-half minutes for full 2400 foot reel			
TYPICAL PERFORMANCE	at 75 ips with ½-inch, 1.5 mil Mylar tape:			
START TIME	3 ms from receipt of command to within ±10% of tape speed			
START DISTANCE	over cycling range of 0 to 200 commands per second tape travels 0.100" ±0.035" 3 ms after receipt of command			
STOP TIME	1.5 ms to cease all tape motion			
STOP DISTANCE	0.080" ± 0.020"			
COMMAND REPETITION RATE	Start/Stop; 0-200 commands per second, 5 milliseconds between commands for performance within specification. Forward/Reverse, short run, >5 <150 milliseconds, no stop required between change of direction. Long run, >150 milliseconds, 100 milliseconds stop required before starting in opposite direction.			
WOW & FLUTTER	less than 1% rms at 75 ips			
INTERCHANNEL TIME DISPLACEMENT (at 75 ips , any two channels, ½" tape)	Static: 4 microseconds maximum Dynamic: ±1.5 microseconds Total: 5.5 microseconds maximum			
TAPE WIDTHS	½ or 1-inch			
TAPE TYPE	1 and 1½ mil Mylar			
TAPE REELS & HUBS	IBM-type 10½" reels and hubs standard for ½-inch tape. Potter special "Quick-lock" hubs standard for 1-inch NARTB. Other reel/hub combinations available.			
TAPE LOADING	complete tape loading and threading is less than 15 seconds			
REMOTE CONTROL INPUTS	Run/Stop; Forward/Reverse; Normal Speed/Rewind Speed, Speed control: High/Low. All Ov/-5v at 6 ma, d.c. levels.			
CONDITION INDICATION	EOT/BOT Sensing Ready Forward Reply Reverse Reply Automatic-Manual Write Lock-out (Type C contact) Power Supply			
ELECTRONICS	All control circuits completely transistorized; modular plug-in construction used throughout			
HEAD SPECIFICATIONS	For IBM compatibility, specify Model 17513-7 head. Heads for other formats available			
PHYSICAL DATA:				
	Dimensions (inch)		Weight	
	High	Wide	Deep	(lbs.)
MT-75 Tape Transport	36¾	19	12	120
EC-75 Drive Electronics & Control	7	19	19	55
M3340 Cabinet	76	27	35	415
POWER	115v ±10%, 60 cycles, 600 watts, 900 watts peak; 230 v, 50 cycles optional			
AMBIENT TEMPERATURE (Operating)	32°F. to 125°F.			

MT-75 INTERFACE CONNECTIONS

Letters refer to contact pins, connector J/P-102, EC-75 Drive Electronics Chassis:

- A. -5v run/0v stop, at 5 ma
- B. -5v reverse/0v forward, at 5 ma
- C. Stop at EOT input (place jumper to pin D)
- D. EOT Output: Not on Foil, -15v. Maximum load to ground, 5 ma. On Foil, 0v.
- E. Ready Signal: -10v at 5 ma
- F. 10v nominal servo supply sample at 2 ma
- G. Rewind Command: -5v at 10 ma
- J. Stop at BOT input (place jumper to pin K)
- K. BOT Output: Not on Foil, -15v. Maximum load to ground, 5 ma. On Foil, 0v.
- L. Chassis GND
- M. Circuit GND
- N. Run Reverse Reply: -5v at 1 ma
- P. Run Forward Reply: -5v at 1 ma
- Q. Automatic Mode Reply: -7.5v at 2 ma
- T. Capstan Speed Change Command: -5v at 5 ma
- U. +15v sample (for interrogation only) at 5 ma
- V. -15v sample (for interrogation only) at 5 ma
- W. EOT Lamp Out Signal: Out, 0v, 24 ohms to ground; On, -5v to -10v @ 5 ma
- X. Write Lock-out Switch (normally closed contact)
- Y. Write Lock-out Switch (common contact)
- Z. Write Lock-out Switch (normally open contact)

MT-24 AND MT-36 TAPE TRANSPORTS AND TAPE SYSTEMS

The MT-75 is one member of a family of vacuum-buffered tape transports providing a range of speed capabilities as follows:

MT-24 Tape Transport	1 to 36 ips
MT-36 Tape Transport	1 to 50 ips
MT-75 Tape Transport	1 to 75 ips

All these units employ the same basic design configuration, and most parts are interchangeable between models.

POTTER WORLDWIDE FIELD SERVICE AND LOGISTICS PROGRAM

Repair centers in strategic locations within the continental United States and abroad have been established to support the entire Potter product line.

Staffed by highly-trained field representatives, these repair centers are equipped to effect on-site installation of equipments and to perform quality repair, maintenance and overhaul.

Supplementing this capability, if a customer prefers to provide his own equipment support, Potter has established standard instruction courses to train customer personnel, either at Potter or in the field.

A Spare Parts Department, backed up by an extremely large inventory, and streamlined order processing, is available for customer convenience and economy. This inventory permits the customer to realize virtual elimination of downtime as well as savings on spare parts dollars by offering expeditious delivery for replaceable parts. Delivery is available in 24 hours to meet customer emergency requirements — within 72 hours for standard parts under normal conditions. Potter also offers provisioning and logistics capabilities to meet all existing military specifications.

The Potter field service and logistics program is one of the finest in the EDP equipment industry. With reliable, quality-engineered equipment, supported by comprehensive field service, Potter guarantees satisfaction.



POTTER INSTRUMENT COMPANY, INC.

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M906II-2 MAGNETIC TAPE TRANSPORT AND MAGNETIC TAPE SYSTEMS



INTRODUCTION

The M906II-2 Magnetic Tape Transport provides high performance, reliability and maximum design flexibility. Tape speeds of 1 to 150 ips are offered in a wide variety of combinations with standard tape widths from $\frac{1}{2}$ to $1\frac{1}{4}$ inches.

Potter tape transports are also supplied as integrated tape systems. Read/Write amplifiers, manual controls, cabinets and a full line of tape accessories are available to meet almost every known computer format, as well as special laboratory requirements.

When combined with the Potter MA315 Read/Write Amplifier, standard IBM recording densities of 200, 556 or 800 bpi, with data transfer rates up to 80 kc, are available *without program restriction*. Transfer rates of 240 kc (bcd) can also be obtained with M906II-2 tape systems by applying Potter high-density recording techniques.

DESIGN FEATURES

The M906II-2 is the latest model of the well-known and respected Potter M906II series of magnetic tape transports. Experience with over one thousand M906II installations throughout the world has resulted in the evolution of many refinements in this line of equipment which further improve its exceptionally high data transfer performance, reliability and general operating dependability. Among the more significant features are:

- reliable data transfer up to 240 kc (bcd) with Potter high-density recording; 120 kc with standard IBM recording format
- new electromagnetic Write Lock-out switch
- muffled vacuum motor for silent transport operation
- improved servo amplifier
- new, automatic arm retraction system for easy, smooth tape loading and threading
- new nylon low-tape sensor shoe for more uniform reel packing.
- new long-life EOTS lamp readily accessible in redesigned mount
- new regulated power supply
- large tape loop reservoirs and Potter-pioneered vacuum buffers for fast, smooth Start/Stop performance
- interchangeable drive plates to accommodate all major computer tapes from $\frac{1}{2}$ to $1\frac{1}{4}$ inches



Figure 1. Potter M906II-2
Magnetic Tape Transport

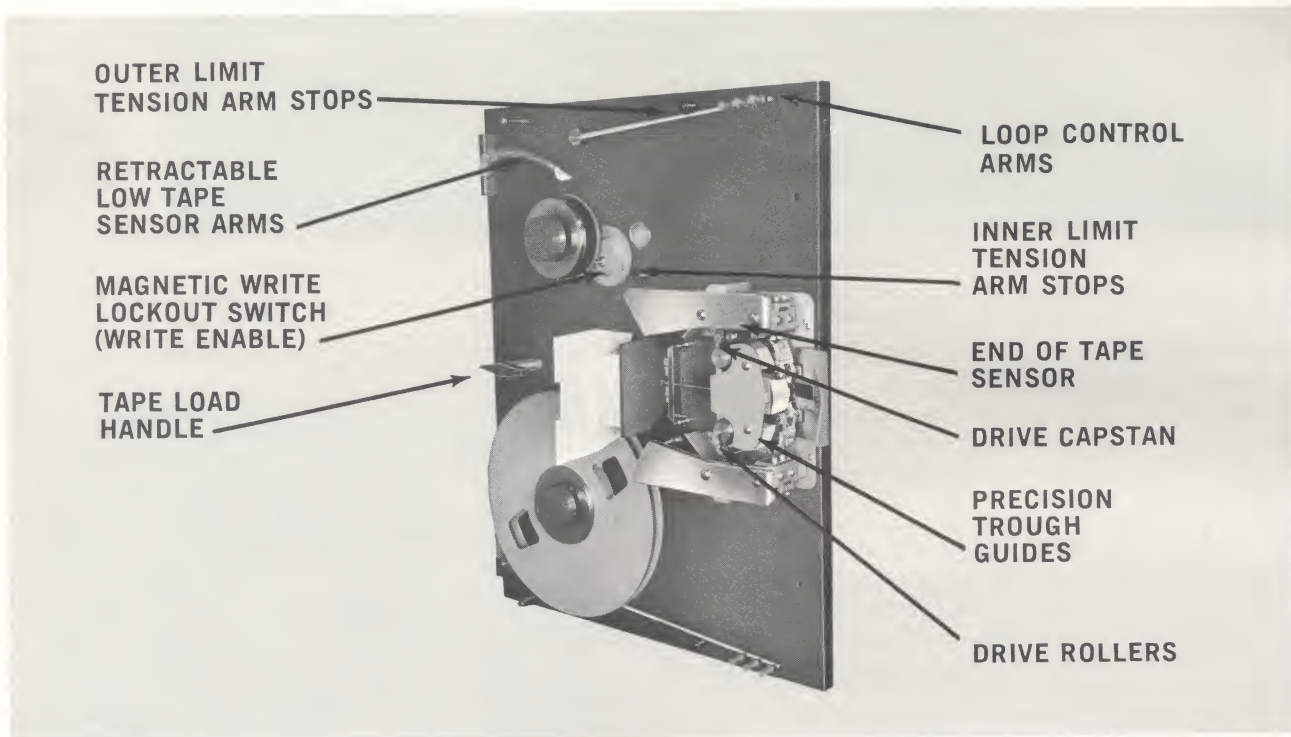


Figure 2. M906II-2 Magnetic Tape Drive

- widest selection of speed combinations with easy retrofit to different speeds
- very low interchannel time displacement obtained with precision tape trough guides
- all solid-state electronics... plug-in modules, including solenoid tape drive circuits and servo amplifiers for fast, dependable tape control
- high-precision, all-metal Read/Write heads for minimum gap scatter and accurate azimuth orientation
- equipment flexibility provided by separate packaging of control and drive electronics
- full tape width DC Erase heads
- optional accessory equipment to meet specific customer requirements

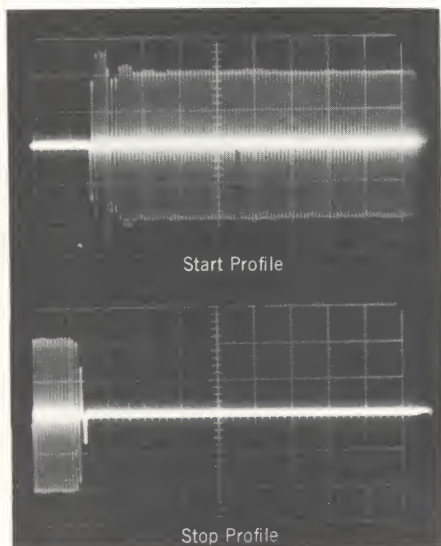


Figure 3. Typical Velocity Profiles (1 div. = 1 ms)

DESCRIPTION

The M906II-2 Magnetic Tape Transport includes the following as standard equipment:

- M906II-2 Tape Drive System
- M3323 Drive Electronics
- Isolation Transformer

Accessory equipment for the M906II-2 transport includes:

- Magnetic Read/Write and Erase heads
- Special reels and hubs
- Write Lock-out switch
- EOT and BOT sensing
- Tape fault detectors

DRIVE SYSTEM

Drive Rollers—Dual, fast-acting solenoid-operated drive rollers, together with their corresponding drive capstans, provide reliable bidirectional tape drive. Capstans are driven by a hysteresis-synchronous motor at single or multiple speeds.

Loop Control Arms—Lightweight yet sturdy loop control arms provide bulk tape storage on each side of the magnetic head. A tape reservoir capacity of 60 inches accommodates high-speed sorting routines and other operations requiring rapid Forward/Reverse cycling. The supply and take-up reels are under the direct control of heavy-duty DC servo motors. Changes in tape direction and velocity are sensed by the loop control arms which provide feedback control to the reel servos.

Vacuum Buffers—Dual vacuum buffers isolate loop control arms from the drive roller and capstan drive system. Vacuum buffers, vital to smooth tape velocity control, are a patented Potter development. Reacting instantaneously to changes in tape speed, the vacuum buffers, together with the loop control arms, eliminate start/stop program restrictions at tape speeds up to 100 ips and minimize restrictions up to 150 ips.

M3323 DRIVE ELECTRONICS

The all-solid-state M3323 Drive Electronics assembly is a standard component of the M906II-2 transport. This unit generates all control signals and voltages required to operate the transport from computer and/or manual command signals.



Figure 4. M3323 Drive Electronics Assembly

SPEED COMBINATIONS

A wide variety of speeds and speed combinations have been produced from 1.0 ips, minimum, to 150 ips, maximum. Combinations of one, two or three pairs of speeds with the following ratios are available: 1.5, 2, 3, 4 & 6:1. Consult your local Potter sales office for special tape speeds.

TAPE LOADING

Low tape sensor and loop control arms are simultaneously retracted by the tape load handle for easy reel loading and tape threading.

Interlocks prevent inadvertent retraction of low tape and loop control arms when reel servos are energized. Potter "Quick-Lock" NARTB reel hubs are available for fast, easy reel loading.

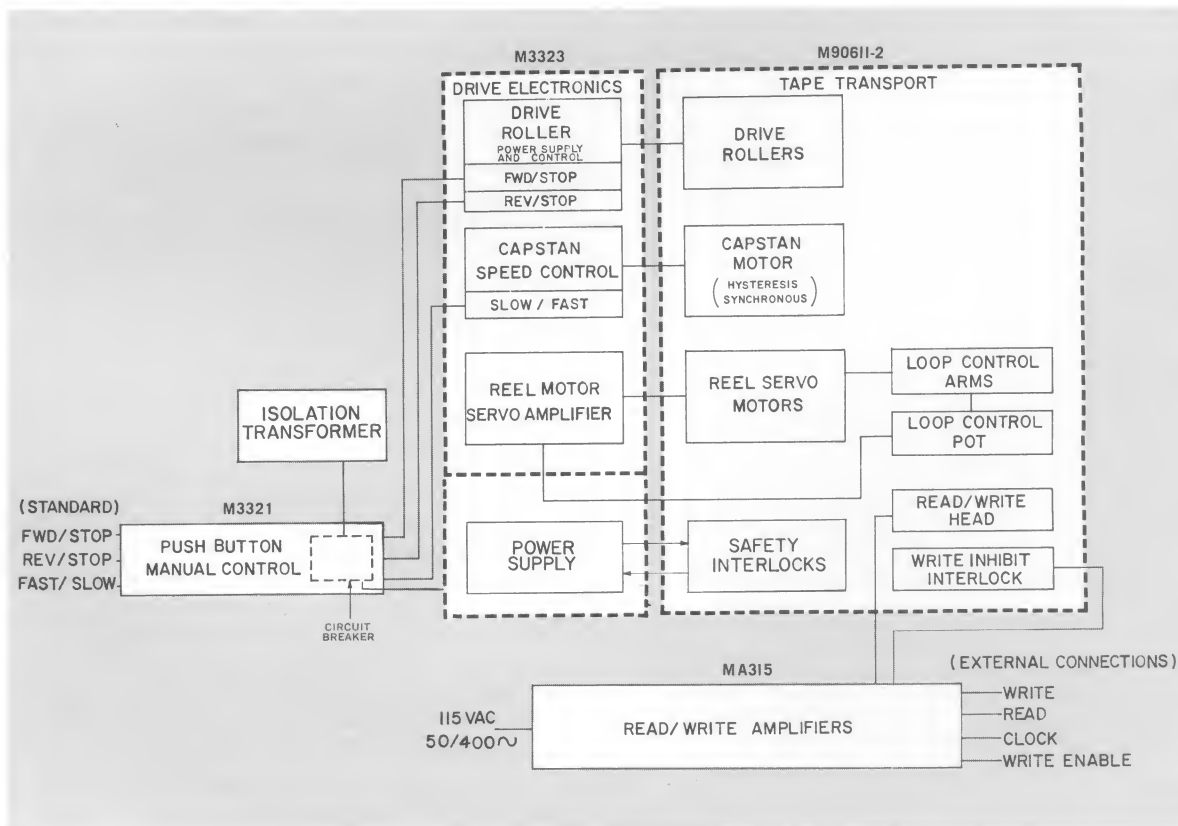


Figure 5. Functional Diagram of M90611-2 Magnetic Tape Transport System

ACCESSORIES

M906II-2 TRANSPORT ACCESSORIES

READ/WRITE HEADS

A complete selection of Read/Write heads is available in a wide variety of computer tape formats. These all-metal head assemblies are precision-machined and mounted on a unique, fixed trough guide assembly which permits interchangeable field replacement. DC Erase heads are also available.

REEL HUBS

IBM-type reel hubs are supplied as standard equipment. Potter NAB and IBM-compatible QUICK-LOCK® hubs are available as optional accessories, permitting reel change in less than 3 seconds.

EOT/BOT SENSING

Split post and IBM-type EOT and BOT sensors and amplifiers are available to meet customer requirements for positive tape control. Beginning and end-of-tape signals are supplied as outputs for computer interpretation.

WRITE LOCK-OUT

Transport design readily accommodates the Write Lock-out (Write Enable) mechanism. New electromagnetic, non-contact type Write Lock-out switch design gives positive performance.

AC LINE ISOLATION TRANSFORMER

The AC Line Isolation Transformer supplies all necessary voltages for operation of the M906II-2 transport or tape system from 105/115/125 VAC, 60 cycles, stable line; 210/230/240 VAC, 50 cycles can be accommodated (not shown).

M906II-2 SYSTEM ACCESSORIES

READ/WRITE ELECTRONICS

A wide variety of compatible and independent format RZ and NRZ Read/Write amplifiers are available for reliable reading and writing of digital data. The MA 315 Read/Write Amplifier accommodates all standard IBM packing densities (200, 556 and 800 bpi). Special Potter high-density systems permit data transfer up to 240 kc. A typical Read/Write amplifier contains:

- 7 Read/Write amplifier channels
- Compatible Clock Generator
- Write Inhibit electrical switching
- Erase head control
- Head compensation for multiple density Read/Write (as required)
- Power Supply (optional)

For further information see the following Product Data sheets:

No. 1-402 MA315 Read/Write Amplifier

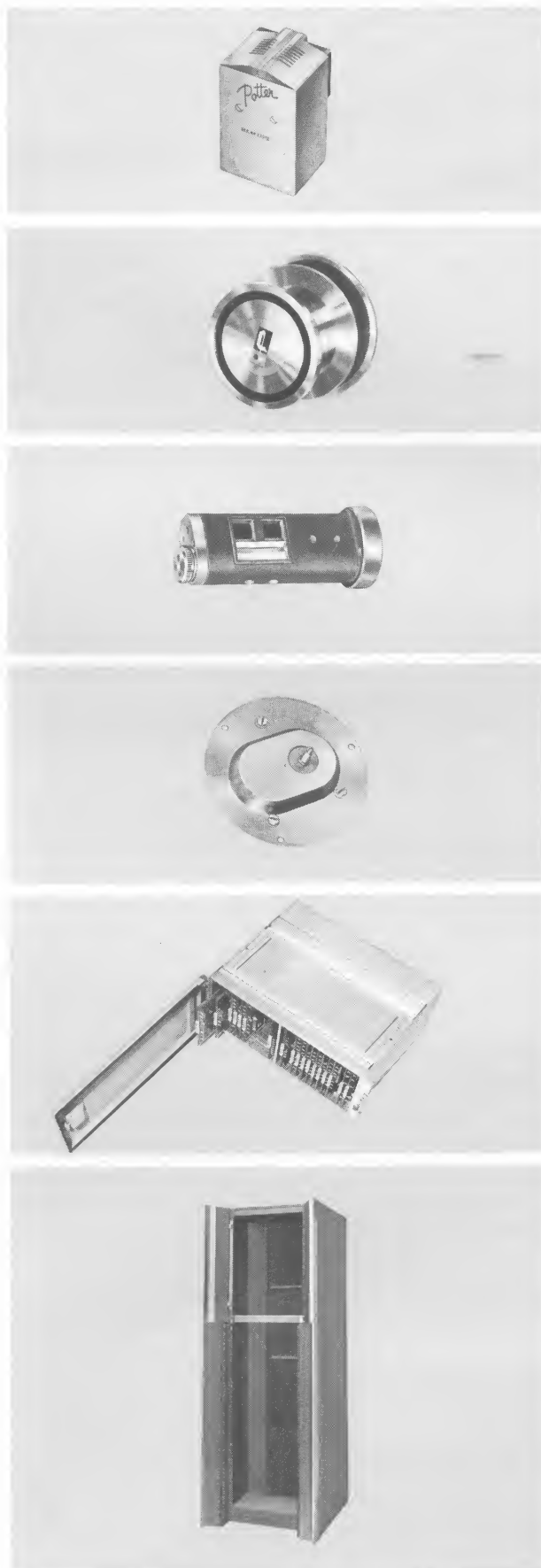
No. 1-403 MSA375 Read/Write Switching Amplifier

MANUAL CONTROL

Manual Control Panel M3321 provides manual push-button control of the M906II-2 Tape Transport. The unit is equipped for standard 19" rack mounting. In addition to the standard controls, REWIND FORWARD and REWIND REVERSE and other optional controls are available (not shown).

CABINET

The sturdily constructed M3340 Cabinet will accommodate the M906II-2 transport, drive electronics and all accessories that comprise the system, including space for customer electronics. The M3340 Cabinet is accessible both front and rear and is equipped with an integral cooling system and glass dust cover. The cabinet is supplied either with standard Potter grey enamel, wrinkle finish or can be finished to suit the customer's specifications.



SPECIFICATIONS

NUMBER OF TAPE SPEEDS	MAX. SPEED (IPS)	MIN. SPEEDS AT SELECTED MOTOR RATIOS (IPS)					STANDARD SPEED COMBINATIONS (IPS) (HYPHEN INDICATES REWIND) ACCURACY: 3%, standard; 1%, optional	MAX. REWIND SPEED	
		1.5:1	2:1	3:1	4:1	6:1		1/2-1" TAPE	1 1/4" TAPE
I 2 Speeds	150	20	10	14	10	7	150/75, 120/60, 75/37.5, 60-240, 60-30, 125/62.5, 62.5/20.83, 75-225, 55.5/9.25, 30-180, 150/50, 112.5/75, 110-220, 100/50, 110/55, 100-200, 60/180, 37.5/150, 60/10, 100/16.67 112.5/225, 120/240	240	225
II 3 or 4 speeds (no low speed)	150	17	13	17	13	8	150/112.5/75, 150/120/60, 150/75/37.5, 112.5/75-225, 112.5/75/97.5/65, 150/70/35, 150/110/55, 120/60/75/37.5	240	225
III 3 or 4 speeds (with low speed)	150	2	2	2	1.5	1	150/75/15/7.5, 150/75/3.75/1.875, 120/60/2/1, 120/60/5, 75/37.5/10/5, 100/50/25/12.5, 100/50/5/2.5, 120/60/3.75/1.875, 60/30/10/5, 150/75/20/10, 150/50/11.25/3.75, 75/18/6-225, 75/36/12-225, 60/20/5-240	240	225
IV 5 or 6 speeds rewind capstan controlled	150	3	2	2	1.5	1	150/100/50/33.3/25, 150/60/30/7.5/3.75, 150/100/75/50/37.5/, 75/37.5/33.3, 60/30/15/10/5-180, 100/50/25/12.5, 120/100/50/75/37.5-240, 150/50/100/25	240	225

PERFORMANCE FIGURES

START TIME

START DISTANCE

STOP TIME

STOP DISTANCE

COMMAND REPETITION RATE

PROGRAM LIMITATIONS (1/2" tape)

WOW & FLUTTER

INTERCHANNEL TIME DISPLACEMENT . .
(1/2" tape; any two tracks, per gap)

TAPE WIDTHS

TAPE THICKNESS

TAPE REELS

REEL HUBS

TAPE LOADING

REMOTE CONTROL INPUTS

Typical performance at 75 and 112.5 ips with 1/2-inch, 1 1/2 mil Mylar tape:

3 ms to within $\pm 10\%$ of steady state speed

0.100" ± 0.035 " at 75 ips, 0.140" ± 0.045 " at 112.5 ips, in 3 ms after "go" signal

Less than 2.0 ms

0.090" ± 0.025 " at 75 ips; 0.130" ± 0.030 " at 112.5 ips

Information can be written at rates up to 100 blocks per second with minimum command separation of 5 ms

Start/Stop—100 ips and below: none

100-120 ips: minor

120-150 ips: specified upon evaluation of requirement.

Forward/Reverse—75 ips and below: none.

75-120 ips: minor

120-150 ips: specified upon evaluation of requirement.

Less than 2% rms, both speeds

Static: 4 microseconds, maximum, at 75 ips; 3.0 microseconds, maximum, at 112.5 ips

Dynamic: ± 1.5 microseconds, maximum, at 75 ips; ± 1.0 microseconds, maximum, at 112.5 ips

Total: 5 1/2 microseconds, maximum, at 75 ips; 4 microseconds, maximum, at 112.5 ips

1/2, 3/4, 1, 1 1/4 inches

1 and 1 1/2 mil Mylar

Standard units have provision for IBM-type 10 1/2" diameter reels. Other types are optional. Potter precision fixed take-up reels are also available

IBM-compatible hubs are standard. Potter NAB and IBM-compatible QUICK-LOCK* hubs, UNIVAC, RCA and other hubs are optional.

Tape load handle provides in-line roller position and low tape arm retraction

All tape functions including SPEED SELECTION, FORWARD, and REVERSE are controlled with standard level-type signals: 0 volts OFF, -5 volts ON; pulse control signals or other levels optional

SPECIFICATIONS (Continued)**CONDITION INDICATION**

Low tape on either reel: NO type contact. Tape being loaded or tape not loaded: NC contact. Write Lock-out: form C contact (optional). End-of-tape and beginning-of-tape sensors:

- split post and photorefective types with associated amplifiers available:

—10 volts @ 5 ma: not sensed; 0.0 volts @ 10 ma: sensed.

CIRCUITS

All control circuits completely transistorized; mounted on glass epoxy plug-in cards

POWER REQUIRED

115 ± 10 volts, 60 cycles, 6 amp standby, 16 amps, peak. 230 volts, 50 cycle input optional

AMBIENT TEMPERATURE (Operating) . .

32°F. to 125°F.

M906II INTERFACE CONNECTIONS

Numbers refer to terminal strip TB-101, M3321 Control Panel Chassis:

1. Lowest speed: Ov off, —5v @ 1.8 ma on (select direction at Pin 10 or 14)
2. 2nd speed, if any: Ov off, —5v @ 1.8 ma on (select direction at Pin 10 or 14)
3. 3rd speed, if any: Ov off, —5v @ 1.8 ma on (select direction at Pin 10 or 14)
4. 4th speed, if any: Ov off, —5v @ 1.8 ma on (select direction at Pin 10 or 14)
5. 5th speed, if any: Ov off, —5v @ 1.8 ma on (select direction at Pin 10 or 14)
6. 6th speed, no rewind with 6-speed unit: Ov off, —5v @ 1.8 ma on (select direction at Pin 10 or 14)
9. Rewind: Ov off, —5v @ 1.8 ma on (select direction at Pin 10 or 14)
10. Forward Drive: Ov off, —5v @ 1.8 ma on
14. Reverse drive: Ov off, —5v @ 1.8 ma on
15. BOT sensor: Ov on foil, —10v off @ 5 ma (1000 ohms source)
17. EOT sensor: Ov on foil, —10v off @ 5 ma (1000 ohms source)
18. Upper low tape: contact closure
19. Common low tape: contact closure
20. Lower low tape: contact closure
21. Forward remote signal outputs: —5v on (jumped to Pin 10)
22. Reverse remote signal outputs: —5v on (jumped to Pin 14)
24. Rewind remote signal outputs: —5v on (jumped to Pin 9)
25. Write Lockout (normally open contact): contact closure
26. Write Lockout (common contact): contact closure
27. Write Lockout (normally closed contact): contact closure
28. Circuit ground
29. Ready: —15v = Ready, 27 ohms to ground, or Open = Not Ready
30. Chassis ground

PHYSICAL DATA

		O/A Dimensions (inches)		Weight (lbs)
		High	Wide Deep	
M906II-2 Tape Transport		24½	19 11	160
M3323 Drive Electronics		7	19 18	35
M3321 Manual Control		3½	19 9	12
M3340 Cabinet		.76	27 35	415
Transformer		8¼	8% 5%	55

POTTER WORLDWIDE FIELD SERVICE AND LOGISTICS PROGRAM

Repair centers in strategic locations within the continental United States and abroad have been established to support the entire Potter product line.

Staffed by highly-trained field representatives, these repair centers are equipped to effect on-site installation of equipments and to perform quality repair, maintenance and overhaul.

Supplementing this capability, if a customer prefers to provide his own equipment support, Potter has established free instruction courses to train customer personnel at the factory.

Our spare parts department, with an extremely large inventory and streamlined order processing, is available for customer convenience and economy. This inventory permits the customer to realize virtual elimination of downtime as well as savings on spare parts dollars by offering expeditious delivery for replaceable parts. Delivery is available in 24 hours to meet customer emergency requirements — within 72 hours for standard parts under normal conditions. Potter also offers provisioning and logistics capabilities to meet all existing military specifications.

The Potter field service and logistics program is one of the finest in the EDP equipment industry. With reliable, quality-engineered equipment, supported by comprehensive field service, Potter guarantees satisfaction.

Information subject to change without notice.



POTTER INSTRUMENT COMPANY, INC.

151 SUNNYSIDE BOULEVARD • PLAINVIEW, NEW YORK • 516 OVERBROOK 1-3200

MT-SR INCREMENTAL MAGNETIC TAPE TRANSPORT AND SYSTEM (READ/WRITE MODEL)



FEATURES

- IBM 7- or 9-Channel Compatible, 200 bpi Tape Format, Automatic I-R Block Generation
- Fast, Smooth Start/Stop Performance
- Single-Capstan Tape Drive
- Completely Asynchronous Operation — Up to 300 Characters/Second with Better than $\pm 10\%$ Pulse Spacing
- High-Speed Continuous Mode for Rapid Read-Check
- All Solid-State Electronics
- Vacuum Column Slack Loop with Photoelectric Loop Sensing
- Maximum Interchangeability of Parts — Member of MT-24/36/75 Family of Tape Transports.

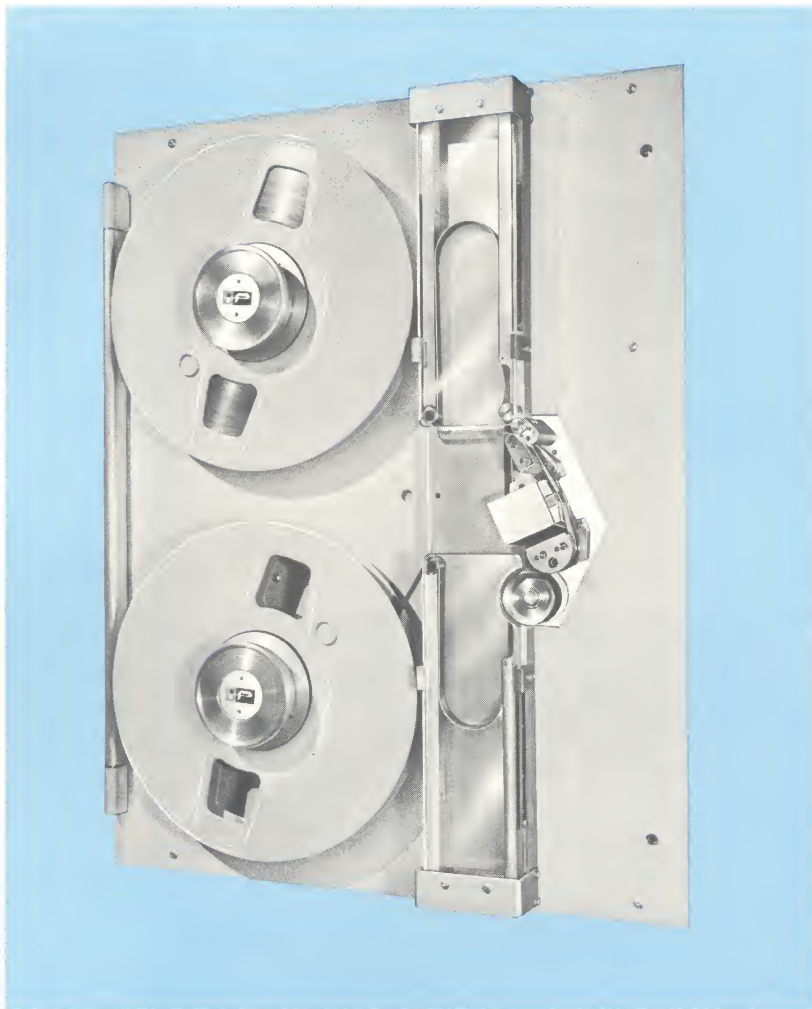


Figure 1. MT-SR Magnetic Tape Transport for Reading and Writing Incrementally

GENERAL

Magnetic incremental stepping recorders are finding widespread use in the fields of data logging, digital data transmission and data processing. These units record digital data on magnetic tape one-character-at-a-time with constant spacing. Unlike computer tape transports which require a constant data rate and a fixed tape speed to insure computer acceptance of recorded data, incremental stepping transports record asynchronously to maintain constant packing density.

Tape is advanced on receipt of a digital character and records information received at any fixed or variable rate up to 300 characters per second.

The incremental magnetic tape transport eliminates the need for intermediate storage (i.e.: punched paper tape and tape-to-tape conversion operations). Typical applications include off-line data logging, digital data transmission and data processing, inventory control, telemetry, point-of-origin data documentation and long-term recording.

DESCRIPTION

The Potter MT-SR Incremental Tape Transport provides reading or writing capability in a 300 character-per-second incremental feed mode using an IBM 200 bpi 7- or 9-channel tape format. The unit is designed on a standard Potter Model MT-24 transport panel frame to achieve maximum interchangeability of common spare parts, simplicity of maintenance procedures, and flexibility of operation with Potter's MT-24/36/75 family of low-cost tape transports.

The MT-SR utilizes a new, proprietary stepping mechanism which permits asynchronous step reading as well as writing up to 300 characters-per-second. Bit positioning accuracy (pulse spacing jitter) is better than $\pm 10\%$.

Unique features incorporated in the design enable the transport to attain full operating speed in 2.5 milliseconds without transient overshoot when operating in the Step mode.

In addition to the incrementing mode, a continuous drive mode providing 21 ips steady running speed and fast Start/Stop times permits interblock gaps to be generated with a minimum of lost time. The continuous mode may also be used for high-speed

back-spacing to permit check reading and rewrite of blocks of information.

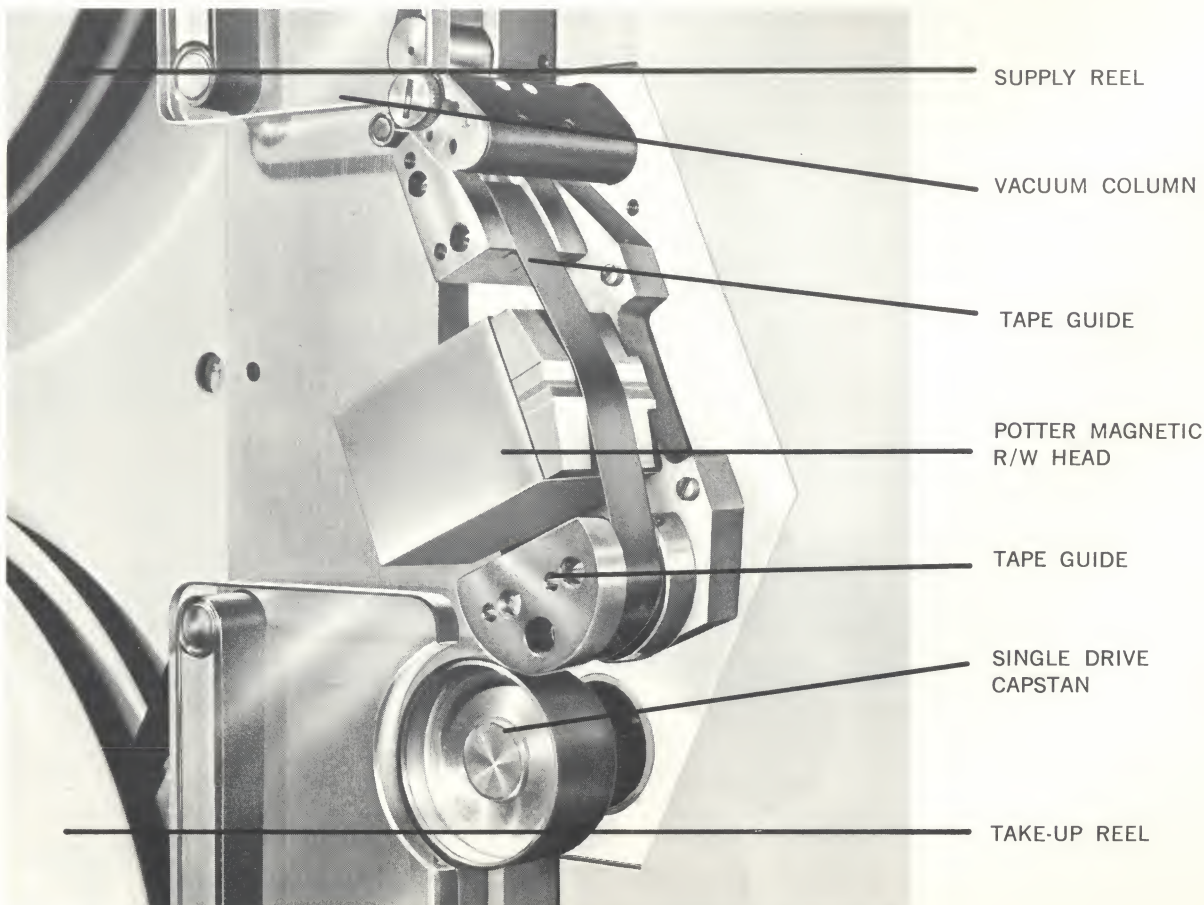
The MT-SR employs a single-capstan tape drive for accurate tape motion control, vacuum-column slack loops with photoelectric loop sensing, and handles standard 10½-inch reels of ½-inch tape. Solid-state circuits are included for controlling all operations by means of standard signals.

The entire transport, including control panels and drive electronics, fits on a standard 19-inch rack. The transport panel requires only 24½ inches (minimum) of vertical space and 11 inches in depth. All controls are on the front, and printed circuit cards are inserted and removed from the front.

A special version of the Potter MA212 solid-state Read/Write Amplifier has been developed for incremental and continuous Read/Write operation in IBM tape formats. (See Specifications.)

Accessory items include a Potter M7500 series 7- or 9-channel IBM compatible dual-gap Read/Write head assembly, remote manual control pushbutton station, a tempered glass dust cover, and Potter ACC-8501 QUICK-LOCK* Hubs for instant reel changing.

Figure 2. MT-SR Incremental Tape Transport



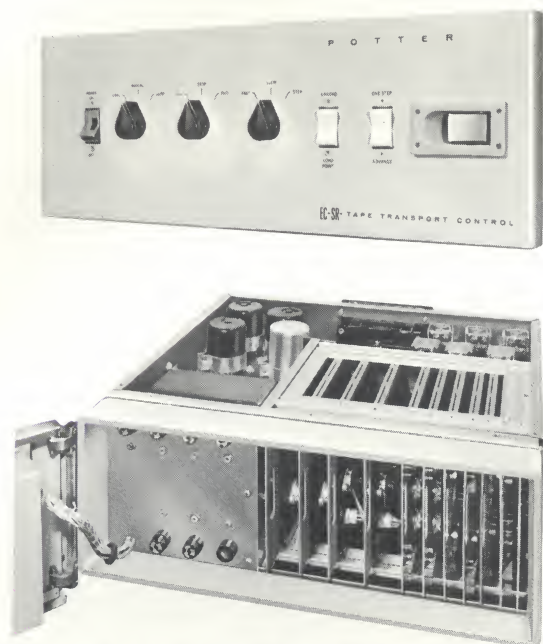


Figure 3. Potter EC-SR Drive Electronics and Control Assembly

DRIVE ELECTRONICS & CONTROL PANEL

All transport functions are controlled by a combined drive electronics and manual control assembly supplied with the transport. This compact package contains all electronics, together with necessary power supplies for automatic or manual operation. Electronics are solid-state and feature printed circuit plug-in modules. A hinged front door gives immediate access to plug-in modules.

For remote operation, the LOAD/MANUAL/AUTOMATIC switch is placed in the AUTOMATIC position; other controls, in the STOP position.

OPERATING CONTROLS

Manual Control

Function		Type of Switch
Power	On/Off	2-position
Speed	Fast/Slew/Step (operation in Manual only)	3-position, fixed
Direction	Reverse/Stop/Forward (operation in Manual only)	3-position, fixed
Mode	Load/Manual/Auto	3-position, fixed
Setup	Unload/Off/Load Point	3-position, momentary rocker
Command	One Step/Off/Advance	3-position, momentary rocker

An interlock protects equipment from operation error by prohibiting rapid switching from fast forward to fast reverse.

Complete reel loading and tape threading can be accomplished in only fifteen seconds.

ACCESSORIES

M7500 MAGNETIC READ/WRITE HEAD

A complete selection of Potter magnetic heads is available for IBM 7- or 9-channel and other formats. Heads are all-metal and precision machined to stringent specifications for maximum tape life and minimum interchannel time displacement.

REELS AND HUBS

IBM-type reels and hubs are standard equipment on MT-SR transports. Reel/hub combinations of other manufacturers can also be accommodated. Special Potter QUICK-LOCK* hubs are available for fast reel changing.

*QUICK-LOCK is a trademark of Potter Instrument Company, Inc.

EOT/BOT SENSING

Photoreflective (IBM-type) end-of-tape and beginning-of-tape sensing is available for reliable tape control.

WRITE CONTROL

A Write Lockout (Write Enable) switch is available for use with File Protect rings on IBM or NAB reels.

READ/WRITE ELECTRONICS

Each Read/Write electronics assembly may contain:

- Up to 9 Read/Write amplifier channels
- Clock Generator
- Write Inhibit electrical switching
- Erase Head control (as required)
- Power Supply

For further information see the following Product Data Sheets:

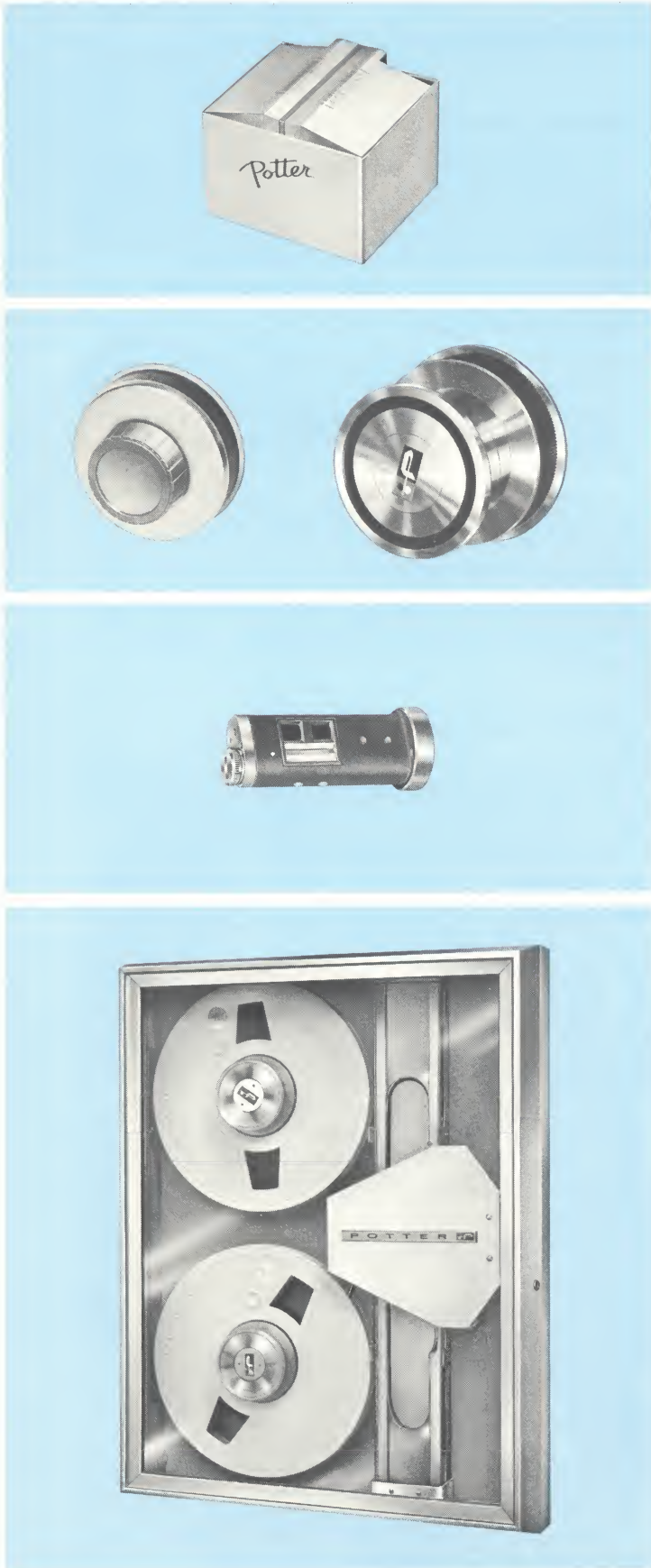
- No. 1-402 MA315 Read/Write Amplifier
- No. 1-403 MSA375 Read/Write Switching Amplifier
- No. 1-404 MA212 Read/Write Amplifier

SWITCHING ELECTRONICS

Switching amplifiers are available which reduce the cost of digital magnetic tape systems by permitting time-sharing of a single Read/Write amplifier package among groups of up to four tape units.

TEMPERED GLASS DUST COVER

Tempered glass dust covers are supplied at no charge if the transport is ordered with a cabinet or at nominal cost as an accessory item. Frames are of rigid, extruded aluminum. Simplified latch facilitates opening and closing operation.



CABINET

The MT-SR can be installed in any standard 19-inch rack cabinet, including Potter's M3340 and CAB-250. The sturdy construction of these cabinets permits full swing-out of the transport. Standard 19-inch mounting rails give solid mounting support for drive and write amplifier electronics assembly, as well as provide abundant space for mounting of customer electronics packages.

SPECIFICATIONS

TAPE FORMAT	IBM 7- or 9-channel, 200 bits/inch			
TAPE FEED MODES	a) Incremental: Step Read; Step Write; b) Continuous at 21 ips, Forward/Reverse c) Fast Forward (manual only) d) Rewind (automatic or manual)			
INCREMENTAL FEED				
SPEED				
ASYNCHRONOUS	0 to 300 steps per second, reading or writing			
SYNCHRONOUS	3.5 ips (700 characters per second)			
DENSITY				
WRITING	200 bpi			
READING	Any density up to 200 bpi			
DIRECTION				
STEP/WRITE	Forward only			
STEP/READ	Forward or Reverse			
INTERNAL INCREMENTAL FEED CONTROL, RECORDING	From tone-wheel derived position signal			
INTERNAL INCREMENTAL FEED CONTROL, READING	From character gate signal (generated clock) developed in playback amplifier			
CONTINUOUS FEED	21 ips, $\pm 2\%$, FWD or REV, Suitable for $\frac{3}{4}$ " inter-block gap using 0.3" spacing dual Read/Write IBM-compatible head			
START TIME — FWD	5 msec to within 10%			
REV	10 msec to within 10%			
START DISTANCE — FWD	Less than 0.100" in 5 msec			
REV	Less than 0.200" in 10 msec			
STOP TIME	5 msec maximum			
STOP DISTANCE	Less than 0.100"			
SKEW @ 21 IPS — Static	16 μ sec, maximum			
Dynamic	± 16 μ sec, maximum			
REWIND TIME (2400 FEET)	Less than 4 minutes			
SPEED CHANGE TIME				
TO SWITCH FROM STEP TO CONTINUOUS, OR VICE VERSA	1 second			
TO SWITCH FROM FORWARD TO REVERSE, OR VICE VERSA, IN EITHER STEP OR CONTINUOUS MODE	10 msec			
REWIND TO STEP OR CONTINUOUS	5.0 seconds			
BIT SPACING (STEP WRITE)	0.005" $\pm 10\%$ (200 bpi)			
BEGINNING AND END OF TAPE SENSING	IBM-compatible reflective spot detector for both Beginning End and End-of-Tape			
TAPE WIDTH	$\frac{1}{2}$ -inch			
TAPE TYPE	IBM heavy-duty tape or equal recommended			
TAPE REEL	IBM 10 $\frac{1}{2}$ " or 8" plastic reels			
PROGRAM LIMITATIONS (See explanation of commands on last page)	0-200 commands per second FORWARD, STOP and REVERSE are considered commands. Minimum time between commands: 5 milliseconds			
ENVIRONMENTAL CONDITIONS — OPERATING				
TEMPERATURE	40°F to 95°F			
RELATIVE HUMIDITY	20% to 80% with a maximum wet bulb of 78°F			
ELECTRONICS (OPERATING CONDITIONS)	0°F to 125°F			
POWER	115V AC $\pm 10\%$, 50-60 cps, single-phase			
TRANSPORT & DRIVE ELECTRONICS	600 VA, standby; 800 VA, normal run; 950 VA, peak			
AMPLIFIER	200 VA maximum			
DIMENSIONS AND WEIGHT				
	Height	Width	Depth (approx.)	Weight
MT-SR INCREMENTAL TRANSPORT	24 $\frac{1}{2}$ "	19"	11"	110 lbs
EC-SR TRANSPORT ELECTRONICS	7"	19"	19"*	60 lbs
MA212 AMPLIFIER	5 $\frac{1}{4}$ "	19"	18"*	15 lbs.
P-11 POWER SUPPLY (for Amplifier)	3 $\frac{1}{2}$ "	19"	16 $\frac{5}{8}$ "*	25 lbs.
TRANSPORT DUST COVER	—	—	—	15 lbs.

CONTROL INPUT LINES			
INPUT LEVELS	Logic "1": -5V to -15V DC Logic "0": Ground $\pm 0.5V$ DC	RUN	The "1" input level will cause tape motion in the selected direction (as determined by the Reverse input line) at 21 ips, provided that the Slew input is also at the "1" level.
REWIND	A "1" level places the unit in a high speed reverse mode. The tape is first withdrawn from the vacuum columns and after a 5-second delay, the tape is wound at full speed onto the supply reel. If BOT is detected, the tape will stop, load into the vacuum columns, run forward at 21 ips (provided the Reverse line is at the "0" state) and stop on the BOT marker. If the input signal is dropped to the "0" level before the BOT is detected, tape motion will stop and the tape will automatically be loaded into the vacuum columns. The Ready signal will be at the "0" level throughout the rewind mode (until the unit is ready to accept other commands).	REVERSE	The Reverse input level determines the direction of tape motion for Step Write, Step Read, and Slew inputs. The "1" level selects Reverse and the "0" level selects Forward.
STEP WRITE	When the input is switched from the "0" to the "1" level, the tape will move at 3.5 ips in the direction determined by the Reverse input line. Tape motion will stop only if the input level is switched to "0" before the trailing edge of the Write Clock Delay signal. Any pulse shorter than 0.5 milliseconds will limit tape motion to one step.	GENERATE INTERRECORD GAP	When the input is switched from "0" to "1", the tape will move 0.75 inch with the longitudinal check character written four character spaces after the last written character; maximum rise time is 2 μs ; minimum duration is 2 μs , maximum duration is 50 ms. (A separate output will be generated by the Read/Write equipment to indicate when the IRG or IFG has been generated and the next command may be given.)
STEP READ	When the input is switched from the "0" to the "1" level, the tape will move at 3.5 ips in the direction determined by the Reverse input line. Tape motion will stop only if the input level is switched to "0" before the trailing edge of the Read Gate Delay signal. Any pulse shorter than 0.5 milliseconds will limit tape motion to one step.	GENERATE FILE GAP	When the input is switched from "0" to "1", the tape will move 3.5 inches with the longitudinal check character written four character spaces after the last written character and the file mark written after the 3.5 inch space. After the file mark another longitudinal check character and 0.75 inch inter-record gap will be generated. Maximum rise time is 1 μs ; minimum duration is 2 μs , maximum duration is 50 ms. (A separate output is generated by the Read/Write equipment to indicate when the IRG or IFG has been generated and the next command may be given. See Gap Indicator.)
SLEW	The "1" level selects 21 ips tape speed. Tape can only move at 21 ips if the Run and Slew input lines are both at the "1" level. After a maximum of 1 second from the time that the input line is switched from "1" to "0", the unit will take from 1 to 3 steps so as to be ready to accept Step Write commands.	NOTE: The Step Write, Step Read and Slew lines are interlocked so that if more than one of these three commands are given at the same time, the unit will only respond to the command given first and ignore all others. The Rewind command overrides all others.	

REPLY LINES

READY	The output is Logic "1" when the AUTO/MANUAL/LOAD switch is in the AUTO position, the power is on, the tape is loaded in the vacuum columns; the vacuum column, EOT, and the tone wheel lamps are on, and the transport is not in rewind. Output Levels — Logic "1": -15V DC through 1K Logic "0": Ground $\pm 0.5V$ DC Output Current — Logic "1": 5 ma maximum, source Logic "0": 20 ma maximum, sink	WRITE CLOCK DELAY	Information is written when the Write Clock switches from the "0" to "1" level; all Write input lines to be written must be at the "1" level when this switching takes place and for a minimum of 2 μs thereafter. The trailing edge of the Write Clock Delay is used to signal for tape motion to stop provided that the Step Write input is at the "0" level. Output Levels — Logic "1": -15V DC through 1K Logic "0": Ground $\pm 0.5V$ DC Output Current — Logic "1": 5 ma maximum, source Logic "0": 20 ma maximum, sink Maximum Rise Time: 2 μs Maximum Duration: 1 ms Maximum Fall Time: 20 μs
EOT	The end-of-tape output line is at Logic "1" when the reflective strip nearest the panel is under the sensor and Logic "0" when the strip is away from the sensor. Output Levels — Logic "1": -15V DC through 1K Logic "0": Ground $\pm 0.5V$ DC Output Current — Logic "1": 5 ma maximum, source Logic "0": 20 ma maximum, sink	READ GATE DELAY	The output switches to "1" when the "first-bit-in" of any character is detected. The trailing edge of this signal is used to stop tape motion provided that the Step Read input is at the "0" level. Output Levels — Logic "1": -15V DC through 1K Logic "0": Ground $\pm 0.5V$ DC Output Current — Logic "1": 5 ma maximum, source Logic "0": 20 ma maximum, sink Maximum Rise Time: 2 μs Maximum Duration: 1 ms Maximum Fall Time: 20 μs
BOT	The beginning-of-tape output line is at Logic "1" when the reflective strip furthest from the panel is under the sensor and Logic "0" when the strip is away from the sensor. Output Levels — Logic "1": -15V DC through 1K Logic "0": Ground $\pm 0.5V$ DC Output Current — Logic "1": 5 ma maximum, source Logic "0": 20 ma maximum, sink		

READ/WRITE INPUT LINES

Description	Logic
Write Inputs—7 or 9 Channels	Level: "1" = -5V to -15V DC "0" = 0V $\pm 0.5V$ DC
Write Enable—Enables recording	Level: "1" = -5V to -15V DC "0" = 0V $\pm 0.5V$ DC
Write Reset—A general reset for Write flip-flops and to be used for the generation of the LRCC	Level or Pulse: "1" = -5V to -15V DC "0" = 0V $\pm 0.5V$ DC Maximum Rise Time: 1 μsec Maximum Fall Time: 1 μsec Minimum Pulse Width: 2 μsec
Write Clock—To be used for synchronous writing at slew speed	Pulse: "1" = -5V to -15V DC "0" = 0V $\pm 0.5V$ DC Maximum Rise Time: 1 μsec Maximum Fall Time: 1 μsec Minimum Pulse Width: 2 μsec 50% maximum duty cycle
Low Threshold Select — Reduces Read threshold from approximately 30% to 20%	Level: "1" = -5V to -15V DC "0" = 0V $\pm 0.5V$ DC
Read Reset—A general reset for Read buffer flip-flops and can be used as a Read inhibit	Level or Pulse: "1" = -5V to -15V DC "0" = 0V $\pm 0.5V$ DC Maximum Rise Time: 1 μsec Maximum Fall Time: 1 μsec Minimum Pulse Width: 2 μsec

READ/WRITE OUTPUT LINES

Description	Logic
Read Outputs—7 or 9 Channels	Pulse: "1" = -10V $\pm 2V$ DC "0" = 0V $\pm 0.5V$ DC Maximum Rise Time: 0.3 μsec into 1000pf capacitance to ground Maximum Fall Time: 0.3 μsec into 1000pf capacitance to ground Pulse Width: 0.75 to 2.25 μsec , adjustable
Read Clock—Synchronous with Read outputs	Pulse: "1" = -10V $\pm 2V$ DC "0" = 0V $\pm 0.5V$ DC Maximum Rise Time: 0.3 μsec into 1000pf capacitance to ground Maximum Fall Time: 0.3 μsec into 1000pf capacitance to ground Pulse Width: 0.75 to 2.25 μsec , adjustable
Gap Indicator—Indicates when stepper is in AUTO mode during generation of Interrecord Gap and End-of-File gap. Write inputs, Rewind command and Reverse command must be kept at the zero level when gap indicator output is at the one level	Level: "1" = -10V $\pm 2V$ DC "0" = 0V $\pm 0.5V$ DC

About POTTER®

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POTTER PLANTS — Tape transport production is carried on in this modern 62,000 sq. ft. plant on Sunnyside Boulevard, Plainview, New York. Building also houses corporate offices, sales, engineering and research groups.

East Bethpage Road plant (below), completed in 1963, produces high-speed printers. A third plant in Luquillo, Puerto Rico, manufactures magnetic and photoelectric recording and playback heads. Total manufacturing space in all Potter plants exceeds 110,000 sq. ft.

Present Potter employment is in excess of 650 people.



SALES OFFICES

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POTTER INSTRUMENT COMPANY, INC.

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SC-1060 SINGLE-CAPSTAN
TAPE TRANSPORT AND SYSTEM

FEATURES

- Any bidirectional tape speed up to 120 ips
- Fully automatic tape loading
- Unrestricted programming capability
- IBM 7- and 9-channel (IBM 360 and ASCII) format capability standard
- Center clock or 8-channel system available
- Any information density up to 800 bpi
- Revolutionary new tape drive design, patent applied for
- Data reliability — only surface in contact with oxide is read/write head
- Controlled start/stop times in less than 4 milliseconds at 112.5 ips; 3 milliseconds at 75 ips
- Highly reliable photoelectric tape sensors
- All solid-state servo controls
- Long life . . . minimum servicing

GENERAL DESCRIPTION

The new Potter SC-1060 is a medium-speed, single-capstan digital tape transport capable of bidirectional tape speeds of up to 120 ips *with no program restrictions*.

The SC-1060 is IBM 7- or 9-channel, ASCII 9-channel or 8-channel clocked, format compatible at any tape density up to 800 bpi.

The supply reel is on the right side with the take-up reel on the left. Forward tape motion is from right to left.



Figure 1. Potter SC-1060 Tape Transport System

Newly Designed Tape Drive is Ultimate in Simplicity

A revolutionary tape drive design utilizes a single capstan to pass the tape across the read/write head. Tape is threaded from the supply reel, over the read/write head to the take-up reel on the left side of the transport. The oxide touches no surface except the read/write head, greatly increasing tape life and data reliability.

During rewind the tape does not contact the read/write head, but "floats" on an airfilm over the head because of the unit's high rewind speed.

Control of the tape path is maintained by a precision edge guidance system. Data may be transferred to or from the tape transport at standard bit densities of 200, 556 and 800 bpi or at any other transfer rate up to 96 kc at 120 ips. (For special system applications consult the factory.) Tape tension is uniform throughout the entire reel, resulting in a smooth, even pack.

LOW INERTIA TAPE DRIVE

A low inertia drive provides rapid linear acceleration and deceleration while maintaining control of the tape by the capstan at all times. There are no pinch rollers, vacuum switches, guide rollers, air guides or tension arms to restrict performance. Complicated mechanical adjustments are eliminated.

The tape drive is provided by passing the tape 160° around a metal capstan coated with a resilient material. Sufficient tension is applied to the tape by the vacuum columns to preclude any phase shift or

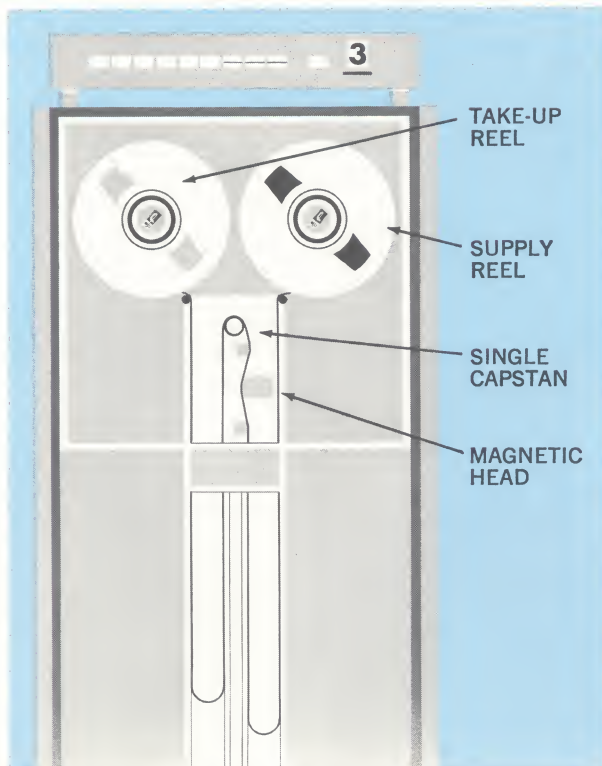


Figure 2. New Single-Capstan Tape Drive System and Direct Tape Path is Ultimate in Design Simplicity

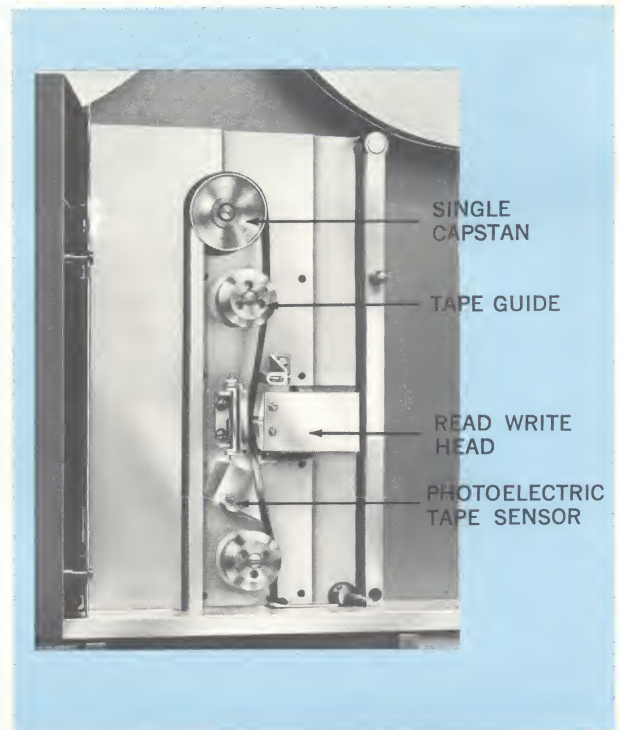


Figure 3. Precision Tape Guidance System

angular slippage of the capstan with respect to the tape. The capstan is coupled to a stainless steel shaft which is in turn coupled to three magnetic particle clutches. One clutch has a locked stator and serves as a brake. The second clutch has a rotating stator belt driven by a synchronous motor. The third clutch is driven by the same motor in the opposite direction and is used for reverse tape drive. The new clutch assembly provides superior starts and reversals, long motor life and maintenance-free operation. (Patent Applied for)

The tape position in the vacuum columns is constantly surveyed by two closed loop servo systems, one for the left reel and column, one for the right reel and column. Position detection is performed by photoelectric cells connected in turn through a signal interpreter to the servo amplifier. The servo motor is driven to pay out tape into, or take up tape from the vacuum column as required to follow the capstan movement. The servo motor utilizes a new dynamic braking system which eliminates mechanical shoes and adjustments forever. The new system is fail-safe even if AC power fails, providing maximum tape protection.

OPERATOR CONTROLS

An operator control panel can be provided with the transport system for local operation and indication. Indicators show the status of the system under local conditions. A remote control connector accepts input control signals and provides output status signals to and from the computer. Tape command interlocks are provided to protect the system from erroneous command sequences.



Figure 4. Operator Control Panel

DRIVE ELECTRONICS

Drive electronics are all solid-state (silicon on low level stages), plug-in modular throughout.

All circuits are fully transistorized and mounted on interchangeable removable printed circuit modules. Test points are provided where required for routine maintenance or service checks. The drive electronics includes all power supplies required for transport operation.

AUTOMATIC TAPE LOADING

Tape loading is easier and faster than ever before with Potter's new single-capstan transports. All that is necessary is to first mount the supply reel on the QUICK-LOCK™ hub assembly. Tape is then threaded from the supply reel, over the head to the take-up reel. From this point loading is accomplished fully automatically at a touch of the LOAD button. Tape is pulled into the vacuum tanks and advances to the load point. The transport will then assume a standby state and be ready for the first computer command. Threading around rollers, multiple capstans, and guides is completely eliminated.



Figure 5. Automatic Tape Loading

EQUIPMENT

The basic Potter SC-1060 transport consists of the following subassemblies:

- The tape transport panel including all tape drive components
- Drive electronics chassis
- IBM-type reel hubs
- Optional accessories
 - End-of-tape (EOT) sensor, photoreflexive IBM-type, plus amplifier
 - Beginning-of-tape (BOT) sensor, photoreflexive IBM-type, plus amplifier
 - Master reel write lockout, IBM-type
 - Dual- or single-gap read/write head assembly, 7- or 9-channel
 - QUICK-LOCK™ hubs
 - Cabinet and dust cover

All Potter equipment includes mating connectors for all interface points.

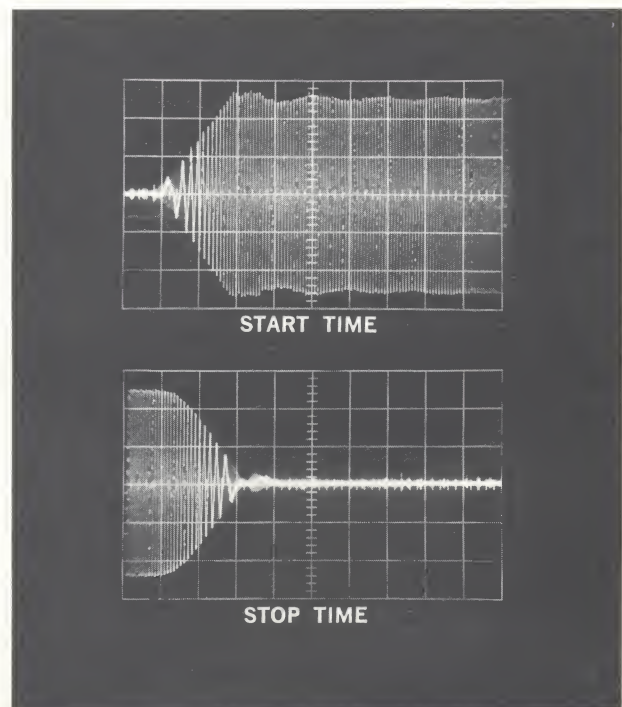


Figure 6. Start/Stop Profiles at 75 ips

ACCESSORIES

Dual-Gap Read/Write Head

The dual-gap read/write head assembly uses an all-metal flush surface housing for longer life and greater reliability. The assembly is non-adjustable and can be replaced by normally skilled maintenance personnel. The read/write head assembly is designed for operation at transfer rates in excess of 120 kc.

A complete selection of magnetic heads is available, including heads for IBM 7- or 9-channel format. Heads are all-metal, precision fabricated for maximum tape life and minimum interchannel time displacement.

Reel and Hub Assemblies

IBM-compatible hubs and one IBM-compatible tape reel are provided. Potter's IBM-compatible QUICK-LOCK™ hub assembly, a significant development in tape transport technology, is offered as an important accessory for the SC-1060. Also, a fixed precision metal take-up reel with matching hub is available.

EOT/BOT Sensing

A dual-channel photoelectric sensor is provided immediately adjacent to the read/write head assembly to detect the presence of standard IBM photoreflexive strips attached to the Mylar™ side of the tape for indicating the load point and end-of-tape positions. A two-channel amplifier with logic level outputs is provided.

Write Lockout

A non-contact write lockout, or file protect, switch is mounted at the supply reel hub. A single form C contact is brought to the transport interface connector. This switch may be wired to Potter MA-series amplifiers to provide automatic write inhibit.

Dust Cover

Tempered glass dust covers are supplied at no charge if the transport is ordered with a cabinet, and at a nominal cost as an accessory item. Frames are of rigid aluminum extrusion.

Cabinet

The newly styled cabinet includes a swing-out front glass panel, rear door, filtered air cooling system, signal connector panel. The cabinet will accommodate all transport components, drive electronics, power supply and accessories that comprise the system, as well as read/write electronics.



READ-WRITE ELECTRONICS

Standard read-write amplifiers are available to accommodate packing densities up to 800 bpi and data transfer rates up to 96 kc.

Each read-write electronics assembly contains:

- up to 8 read-write amplifier channels
- clock generator
- write inhibit electrical switching
- erase head control
- head compensation for Read/Write (as required)
- power supply

™ Mylar is a trademark of E. I. duPont de Nemours Company, Inc.

SPECIFICATIONS

TAPE SPEED	75 and 112.5 ips, standard Speed to 120 ips, optional		
TAPE SPEED VARIATIONS	2%		
REWIND SPEED	380 ips, average		
Rewind Time	Less than 75 seconds for a full 2400' reel		
PACKING DENSITY	200/556/800 bpi		
PROGRAM RESTRICTIONS (1/2-inch tape)	None		
TYPICAL PERFORMANCE (1/2" 1.5 mil Mylar)	at 75 ips	at 112.5 ips	
Start Time	3ms	4 ms	
Start Distance	.075 ± .025"	.170 ± .035"	
Stop Time	3 ms	4 ms	
Stop Distance	.100 ± .025"	.180 ± .030"	
Command Repetition Rate	Any sequence with 5 usec between commands		
Speed Stability — Long Term	1 sec ± 1%	1 sec ± 1%	
Short Term	15 ms ± 1.5%	15 ms ± 1.5%	
Interchannel Time Displacement			
Static	3 usec	2 usec	
Dynamic	3 usec, peak	2 usec, peak	
Dynamic Skew: Tape written and read on SC-1060 or written on IBM 729-VI and read on SC-1060 transport.			
TAPE WIDTH	1/2"		
TAPE TYPE	1.5 mil Mylar		
TAPE REELS	Potter precision or IBM-type 10 1/2-inch diameter reels		
REEL HUBS	IBM-type or optional Potter QUICK-LOCK IBM-compatible hubs.		
TAPE LOADING	Complete tape loading and threading in less than 15 seconds		
REMOTE CONTROL INPUTS	0/-5, -5/0, 0/5, 5/0, Maximum current draw is 3 ma		
CONDITION INDICATION	EOT/BOT, same as above; Write Lockout-Contact Closure, Form C		
ELECTRONICS	All control circuits fully transistorized, modular plug-in construction throughout		
ENVIRONMENTAL CONDITIONS			
Ambient Temperature — Operating (within tape characteristic)	45°F to 125°F		
— Non-Operating	0°F to 165°F		
HUMIDITY	20% to 80% (without condensation)		
POWER	115V AC ± 10%, 60 cps, single-phase (50 cps, optional) 800 watts Standby-1100 watts max.		
DIMENSIONS	Height	Width	Depth
Transport/Cabinet (without control panel)	67 3/4"	27"	31"
Control Panel	4 3/4"	27"	3 3/4"
WEIGHT	500 pounds, approx.		

RELIABILITY AND MAINTENANCE

Reliability of operation is a prime requisite of computer peripheral equipment. The SC-1060 has been planned with this consideration receiving major attention. The mechanical design incorporates a minimum of moving parts with all electronic components derated to conservative levels.

Mean-time-between-failures is estimated to exceed 1,000 hours when the equipment is supported by a normal maintenance program.

POTTER WORLDWIDE FIELD SERVICE AND LOGISTICS PROGRAM

Repair centers in strategic locations within the continental United States and abroad have been established to support the entire Potter product line.

Staffed by highly-trained field representatives, these repair centers are equipped to effect on-site installation of equipments and to perform quality repair, maintenance and overhaul.

Supplementing this capability, if a customer prefers to provide his own equipment support, Potter has established standard instruction courses to train customer personnel, either at Potter or in the field.

A Spare Parts Department, backed up by an extremely large inventory, and streamlined order processing, is available for customer convenience and economy. This inventory permits the customer to realize virtual elimina-

tion of downtime as well as savings on spare parts dollars by offering expeditious delivery for replaceable parts. Delivery is available in 24 hours to meet customer emergency requirements — within 72 hours for standard parts under normal conditions. Potter also offers provisioning and logistics capabilities to meet all existing military specifications.

The Potter field service and logistics program is one of the finest in the EDP equipment industry. With reliable, quality-engineered equipment, supported by comprehensive field service, Potter guarantees satisfaction.

POTTER TAPE TRANSPORTS AND TRANSPORT SYSTEMS

Potter offers the world's broadest line of digital tape transports and tape transport systems.

Tension arm, vacuum-column, single-capstan and incremental transports are available, as well as a complete line of components and accessories, including read/write amplifiers, magnetic heads, drive electronics, manual controls, QUICK-LOCK hubs and cabinets.

In the single capstan series, units are available with tape speeds to 150 ips at all packing densities with unrestricted programming. Write, wire or call General Sales Manager, Potter Instrument Company, Inc., 151 Sunnyside Boulevard, Plainview, New York, telephone (516) OVERbrook 1-3200, TWX 516 433 9320, for complete product specifications.

Information subject to change without notice.



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